DETERMINANTS OF CAPITAL STRUCTURE – A STUDY OF FDI COMPANIES IN INDIA

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NOVEMBER 2010

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BELOVED PARENTS

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THESIS CERTIFICATE

This is to certify that the thesis entitled **Determinants of Capital Structure – A Study of FDI Companies in India** submitted by **Mrs. Rupali Sadanand Ambadkar** to The M. S. University of Baroda, VADODARA for the award of the degree of **Doctor of Philosophy** is a bonafide record of research work carried out by her under my supervision. The contents of this thesis, in full or in parts, have not been submitted to any other Institute or University for the award of any degree or diploma.

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FDI	Foreign Direct Investment Companies
SD	Standard Deviation
COV	Coefficient of Variation
D Statistic	Durbin-Watson Statistic
VIF	Variance Inflationary Factor
STBB+CPLTD/TA	Bank Borrowings Repayable in Less than One Year / Total Assets
STD/TA	Short Term Debt / Total Assets
STD1/TA	Short Term Debt1/ Total Assets
TC&E/TA	Total Trade Credit & Equivalent / Total Assets
STD1/NW	Short Term Debt 1/ Networth
LTBB/TA	Bank Borrowings Repayable in More than One Year/ Total Assets
LTD/TA	Long Term Debt/ Total Assets
LTD/NW	Long Term Debt / Networth
LTD/(NW+LTD)	Long Term Debt / (Networth + Long Term Debt)
LTD/STD1	Long Term Borrowings / Short Term Borrowings 1
TD/TA	Total Debt / Total Assets
TL/TA	Total Liabilities / Total Assets
TD/NW	Total Debt / Networth
TD/(TD+NW)	Total Debt/ Total Debt+Networth
TL/NW	Total Liabilities/ Networth
Log of sales	Natural Logarithm of Sales
Log of GTFA	Natural Logarithm of Gross Total Fixed Assets
Log of TNA	Natural Logarithm of Total Net Assets
PBITDA/TGA	Profit Before Interest, Tax, Depreciation & Amortization /Total Gross Assets
PBT/TNA	Profit Before Tax /Total Net Assets
PBIT/Sales	Profit Before Interest & Tax / Sales
PBIT/CE	Profit Before Interest & Tax / Capital Employed
NFA/TNA	Net Fixed Assets/Total Net Assets
GFA/TGA	Gross Fixed Assets /Total Gross Assets
(Nfa+Inv+AR)/TNA	(Net Fixed Assets +Inventory +Accounts Receivable) / Total Net Assets
INV/TNA	Inventories/Total Net Assets
L&B/TGA	Land &Building /Total Gross Assets
P&E/TGA	Plant & Equipment /Total Gross Assets
SD of PBIT	Standard Deviation of Profit Before Interest &Tax
SD of % change in PBIT	Standard Deviation of Percentage Change in Profit Before Interest &Tax
SD of PBITDA/TGA	Standard Deviation of Profit Before Interest, Tax, Depreciation & Amortization / Total Gross Assets

List of Abbreviations continued……

COV of PBIT / TNA	Coefficient of Variation of Profit Before Interest & Tax/Total Net Assets
COV of PBIT to CE	Coefficient of Variation of Profit Before Interest & Tax/Capital employed
CAGR of TNA	Compound Annual Growth Rate of Total Assets
CAGR of Sales	Compound Annual Growth Rate of Sales
Depr/TGA	Depreciation /Total Gross Assets
Depr+ET/TGA	Depreciation+ Export Turnover /Total Gross Assets
Depr/PBITDA	Depreciation /Profit Before Interest, Tax, Depreciation& Amortization
PBDIT/INT	Profit Before Interest, Tax& Depreciation/Interest payments
Log of age of firm	Natural Logarithm of Age of firm
Equity Div/PAT	Equity Dividend /Profit After Tax
CA/CL	Current Assets /Current Liabilities
Net exp/Sales	Net Exports /Sales
DIV/SC	Dividend Payment/ Share Capital + Reserves
R&D /Sales	Research & Development Expenditure / Sales
INT /DEBT	Interest Payment/Total Debt
NDTS	Non Debt Tax Shields
DSC	Debt Service Capacity
(-ve)	Negative
(+ve)	Positive

CHAPTER - 1

INTRODUCTION

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CHAPTER - 1

INTRODUCTION

This chapter provides a brief background of the problem - the importance of a firm's Capital Structure decision on its value, growth and survival. The Capital Structure decision remains one of the most controversial subjects in the world of finance. Capital Structure refers to the mix of debt and equity which a company uses to finance its long term operations. Role of Capital Structure decision in maximizing the value of the firms with Foreign Direct Investment cannot be underemphasized. Hence the importance of Capital Structure decision and the rationale for selecting Foreign Direct Investment (FDI) Companies in India for the purpose of studying the Determinants of Capital Structure has been stated in the chapter. In addition, the contribution of this study and organization of study with the detailed study plan have been discussed.

1.1 Conceptual Framework

A company may have to raise capital from different sources such as Common Equity and Preferred Equity, Long-Term Debt, specific Short-Term Debt to finance its assets. Each source of fund has its charge. Dividend is paid to suppliers of Equity and Preference Share capital and interest is paid to lenders of Debt capital. Debt financing creates a fixed charge on profits of the company. Although the dividend on Preference Share Capital can be postponed in absence of profits in a particular year, both Debt capital and Preference Share Capital create a fixed charge and this charge is in the form of interest or dividend which has to be paid irrespective of the amount of earnings. The term Capital Structure refers to the way a company finances its assets through some combination of Equity, Debt, or Hybrid Securities. It is also referred to as the financing decision (Capital Structure decision) of a company. This entails the choice of a right/suitable mix of different sources of financing namely owner's funds and lender's funds. The term Capital

Structure refers to financing strategy adopted by a firm- how a firm finances its overall operations and growth by using different sources of funds.

An appropriate Capital Structure is a crucial decision for any firm. Capital Structure decisions assume vital significance in corporate financial management due to their influence on return and risk to the shareholders. The term Financial Leverage is related to the financing activities of a firm. It denotes the ability of a firm to use funds obtained at fixed costs to magnify the return to shareholders. As tax savings are generated due to Debt, it is considered as a cheaper source of finance compared to Equity, but at the same time, increase in Debt Funds increases the risk of bankruptcy or financial risk. Any increase in Financial Leverage increases the financial risk - the risk of the firm's inability to repay its fixed financial costs. This gives rise to the risk of bankruptcy – the possible insolvency arising out of inability to pay the fixed charges of Debt Funds or inability to repay the debt on time. The objective of any firm should be to use the most appropriate financing mix which will maximize the value of firm, minimizing the overall cost of capital. The optimum financing mix which is that combination of Debt-Equity mix that leads to maximization of shareholders wealth is referred to as optimum Capital Structure. Thus the decision about how to finance its long term operations and what should be the proportion of Debt-Equity mix which will maximize firms value is the crux of Capital Structure decision. Does an optimal Capital Structure really exist and what should be the right proportion of Debt and equity mix that will really enhance the value of a firm is a puzzle yet to be solved.

Various conflicting theories of Capital Structure like the Tradeoff Theory, Dynamic Tradeoff, Signaling Theory & Asymmetric Information, the Pecking Order Theory, the Market Timing Hypothesis have been proposed since the seminal work by Modigliani &Miller (1958)[1]. They introduced the Capital Structure irrelevancy propositions in their work on the "Cost of Capital, Corporation Finance and the Theory of Investment". The literature on Capital Structure has been extended by several studies since then.

Chirinko & Singha (2000)[2] found out that their empirical evidence could evaluate neither the Pecking Order nor Static Trade-Off models and they felt the need of alternative tests to identify the Determinants of Capital Structure .

Mayer & Sussman (2003)[3] in their study found that a combination of the Pecking Order and Trade-Off Theories provided a good description of short-run and longer run dynamics. Drobetz & Fix (2003)[4] confirmed the Pecking Order model but contradicting the Trade-Off model in context of Swiss firms and also found out that Swiss firms tend to maintain target leverage ratios.

Huang & Ritter(2004)[5] wanted to test whether the time series variations of financing decisions of publicly traded U.S. firms are explained by Static Trade-off Theory or the Pecking Order Theory or the Market Timing Theory. They could find that neither the Static Trade-Off Theory nor the Pecking Order Theory provided an adequate explanation for these variations. The Market Timing Theory could provide some explanation for observed time-series patterns of external financing decisions of U.S. publicly traded firms.

Bunn & Young (2004)[6] concluded in their study on companies in United Kingdom, that companies appeared to have target levels of gearing. The gearing target appeared to be responsive to tax advantage of Debt and the risk of bankruptcy thus providing empirical support for the Trade-Off Theory.

Brounen *et.al* (2005)[7] confirmed the presence of Pecking Order Theory and Static Trade-Off Theory but did not find convincing evidence of Agency problems or Signaling Theory in their international survey on Capital Structure choice.

Using a panel data of 787 Indian firms for the study periods from 2000 to 2005, Mahakud (2006)[8] concluded that Pecking Order Theory is not followed by the Indian companies.

Mihalca & Antal (2009)[9] found that Pecking Order Theory could be successfully applied to the Romanian market.

Haye& Hecht (2009)[10] found the broadest support for the Static Trade-Off hypothesis of Capital Structure across all three global regions- American, Asian (Chinese, Indian, Japanese), and European (French, English, German) companies.

Every enterprise makes its own decisions regarding Capital Structure. However, there seem to be some general factors that appear to influence the Capital Structure of a firm which help the firms in designing their target Capital Structure. The Capital Structure of a firm is supposed to be determined by these factors which are believed to be the Determinants of Capital Structure. Different Capital Structure theories suggest different factors which may affect a firm's financing decision. Each of the above discussed theories can be tested using these factors which determine the Capital Structure of a firm. Supporting the assumptions of theories of Capital Structure and on the basis of earlier empirical research in this area, these determinants or factor can be divided into firm specific determinants and country specific determinants (macroeconomic factors). The companies will have to choose the best financing mix (Capital Structure) keeping in view these factors thereby targeting that Debt-equity mix which enhances firm value while minimizing costs.

Several contributions have been made in this area and several authors have tried to test whether the Determinants of Capital Structure are able to explain the financing behavior as explained by various Capital Structure theories. There has been continuing theoretical debate over this issue and a number of studies have been undertaken on various aspects of Capital Structure. Still no convincing test yet has been found as regards to which theory and which determinants best explain a firm's Capital Structure decision.

1.2 Rationale of the Study

In the post liberalization era, FDI flows are playing active role in developing countries like India. All developing countries are placing very high emphasis on attracting FDI as it is perceived as major vehicle for growth of an economy. Several initiatives and measures have been taken to encourage flow of FDI in the country.

According to AT Kearney's 2007 Global Services Location Index, India ranks second in the world in terms of financial attractiveness, people and skills availability and business environment. India is proving to be an attractive destination for investments due to its financial stability in spite of current economic meltdown.

After the financial liberalization which started in India in 1991, several restrictions on FDI were relaxed and government started making efforts to attract FDI. Along with this, due to the capital market reforms initiated in India, Indian companies could now raise capital abroad as well as multinational companies started investing in India. There are several sectors which have been opened up by government in India where 100% FDI investments are allowed. So studies on FDI investments have become important in this scenario and the aspect of the Capital Structure of companies where there is FDI does become an important issue to be researched. Now an interesting question is, what is the Capital Structure of companies attracting FDI flows and what are the Determinants of Capital Structure of these companies? How do FDI Companies determine the proportion of their financing mix?

Studies formulating and testing the Determinants of Capital Structure have been plentiful in the last decade. One of the classical researches on Determinants of Capital Structure was conducted by Titman &Wessel's (1988)[11]. Making an international comparison, Rajan & Zingales (1995)[12] stated that the Determinants of Capital Structure (such as size, growth, profitability, and asset structure) are important for the G7 countries. Booth *et al.* (2001)[13] identified similar Determinants of Capital Structure for ten developing countries. Baral (2004)[14] examined the Determinants of Capital Structure of the companies listed in Nepal Stock Exchange Ltd. Song (2005)[15] investigated Capital Structure determinants of Swedish firms. Jong *et.al* (2005)[16] tested the importance of firm-specific and country-specific factors in explaining the leverage choice of firms from 42 countries around the world. Dragota & Semenescu (2008)[17] tested the Capital Structure determinants of Romanian listed companies. Mahmud *et.al* (2009)[18] examined whether country's economic factors play a significant role in determining Capital Structure using data of firms from three Asian countries- Japan, Malaysia and Pakistan.

Some of the important Indian studies where Determinants of Capital Structure were tested are Bhat (1980)[19], Mittal & Singla (1992)[20], Kantawala (1997)[21], Kakani (1999)[22], Bhattacharyya & Banerjee (2001)[23], Garg & Shekhar (2002)[24], Bhaduri (2002)[25], Bhole & Mahakud (2004)[26], Gupta(2004)[27], Khasnobis& Kar(2006)[28]. Although several studies have been carried out to examine the financing pattern and to study the Determinants of Capital Structure of firms across the globe, major empirical research on Capital Structure and its determinants is available from developing countries and relatively less work has been undertaken in a developing country like India. Even in India, despite the available research carried out in corporate finance examining the Capital Structure of Indian firms, very few of the studies have actually assessed Capital Structure policies of FDI Companies in India.

Most of the recent studies on Foreign Direct Investment have focused on issues such as Trend and Determinants of Foreign Direct Investment or policy suggestions to attract more Foreign Direct Investments. One of the interesting studies was conducted by Rajakumar (2005)[29] who observed performance differentials between Indian and FDI Companies in India. In another significant study, Babu & Jain (1998)[30] had examined the Capital Structure practices followed by private corporate sector firms in India during the period 1980 to 1994. The study was divided into four major parts and in one of these sections they had undertaken a comparative study on the Capital Structure practices of foreign controlled firms in India verses the domestic companies. Their study was mainly based on comparisons using two sample 't' test of various ratios: Debt-equity ratio, Total Debt to Assets ratio, Net Worth to Asset ratio, Short Term Debt ratio, Long Term Debt ratio, Long Term Debt to Total Asset ratio, Short Term Debt to Long Term Borrowings, Interest Coverage ratio and observation of financial and operating risk characteristics of foreign controlled and domestic firms in India. They had not studied the Determinants of Capital Structure of foreign controlled companies but had emphasized on profile of debt financing of foreign firms. They had found out that foreign controlled companies had lower Debt-equity ratio as compared to domestic companies.

The other notable studies in the area were, Akhtar (2005)[31] who had undertaken research on Determinants of Capital Structure on a sample of Australian multinational and domestic corporations, or Lee & Kwok (1988)[32] who tried to find out differences in Capital Structures of U.S based multinational corporations (MNCs) and U.S domestic corporations (DCs), or Boateng (2004)[33] who studied the Capital Structure of international joint ventures (JV) of Ghana. Desai *et.al* (2006)[34] examined how exposures to political risks influence the financing choice of

American multinational firms. They explored the relationship between Capital Structure and risky investments. The analysis revealed that foreign subsidiaries located in politically risky countries were highly levered than other foreign subsidiaries of the same multinationals. Firms facing higher foreign political risks also reduced domestic leverage and thereby reduced their overall leverage.

Yasuhiro *et.al* (2006)[35] reviewed the characteristics and strategy of Capital Structure choice of the Asian affiliates of Japanese multinational companies, in comparison to those of western counterparts. They believed that, "Capital Structure choice of foreign affiliates is particularly important for multinationals because the capital markets differ among countries with respect to the degree of development. A multinational firm should maximize its consolidated firm value under such difference. In particular, it should raise necessary capital in a country where capital cost is low, and optimally allocate the fund to the firms that provide it with the highest value", Yasuhiro *et.al* (2006, page 1)[35]. They concluded that foreign affiliates of Japanese multinational firms, in comparison to U.S counterpart, relied heavily on internal capital market and borrowings from parent company.

In effect, we can conclude that relatively less work has been done to enhance our knowledge of Capital Structure within developing countries like India and there has been relatively no empirical research on Determinants of Capital Structure of Foreign Direct Investment Companies and that too on those existing in India. It is difficult to find empirical evidence as to how FDI Companies actually make a choice between financial instruments to determine their Capital Structure and whether the choice of Capital Structure in turn determines the company's performance and extent of its foreign holdings. With globalised markets, India is attracting many global players and these companies are heavily investing in Indian market, which suggests that the Determinants of Capital Structure of Foreign Direct Investment Companies in India are becoming increasingly important, particularly in the current economic scenario. Therefore, the purpose of this study is to fill this research gap by analyzing the Determinants of Capital Structure of Foreign Direct Investment Companies in India.

1.3 Capital Structure and Financial Structure

The Capital Structure decision refers to proportion of Debt and Equity mix which a company uses to finance its long term operations. The terms 'Financial Structure' and 'Capital Structure' are sometimes used synonymously. Financial Structure although is a wider term, as it denotes the way in which a company's assets are financed, such as Short-Term Borrowings, Long-Term Debt, and Owners Equity. The difference between Financial Structure and Capital Structure is that; The Capital Structure accounts for Long-Term Debt and Equity only and mainly refers to permanent financing of a company whereas Financial Structure is referred to as the liabilities side of a firm's balance sheet, specifying how its assets are financed, including all sources of finance – Short Term Debt including Current Liabilities, Long Term Debt and Equity issues. It is generally understood that Financial Structure differs from Capital Structure as Capital Structure accounts for Long-Term Debt and Equity only and does not include short term liabilities. Financial Structure is a wider term and Capital Structure is a part of Financial Structure.

There is also the concept of leverage which has been used as synonym to denote the Debt-Equity ratio or Capital Structure by several authors. "The employment of an asset or source of funds for which the firm has to pay a fixed cost or fixed return is termed as leverage", Khan& Jain (2004,page 14.3)[36]. Actually there exist two types of leverages- Operating leverage and Financial leverage. The extent of fixed costs in operating activities of a firm determines the Operating leverage. It is defined as, "the firm's ability to use fixed operating costs to magnify the effects of change in sales on its earnings before interest and taxes." Khan& Jain (2004,page 14.6)[36]. Financial leverage is related to financing activities of the firm. "The use of fixed-charges source of funds, such as debt and preference capital along with the owners' equity in the Capital Structure, is described as Financial leverage or gearing or trading on equity".(Pandey I.M,page 290)[37].

Rajan & Zingales(1995, page 8)[12] had said that , "Given the observed differences in the composition of liabilities, before undertaking any investigation of leverage it is appropriate to define what we mean by this term. Clearly, the extent of leverage and the most relevant measure depends on the objective of analysis."

In this study of examining the Determinants of Capital Structure of FDI Companies in India, the term 'Debt Ratios' is used to denote Financial Structure or Capital Structure or Leverage. Since all the possible sources of financing mix are considered in this study and variety of Debt Ratios which include Short Term Debt and even Current Liabilities along with Long Term Debt have been employed in the study, the terms Financial Structure, Capital Structure and Leverage are used as synonyms. If the term Leverage is used, it refers to Financial Leverage.

1.4 Objectives of the Study

The study aims to investigate the Determinants of Corporate Capital Structure in India, in more detail with reference to FDI Companies in India.
The main objectives of the present study can be put as:

1. To investigate the financing pattern adopted by FDI Companies in India by examining the trends in the use of debt over the period of study.

2. To identify the major Determinants influencing the Capital Structure decision of FDI Companies in India.

3. To identify the Industry-wise Determinants of Capital Structure of FDI Companies in India and to examine the difference, if any, in the Capital Structure Determinants of FDI Companies in India on the basis of their affiliation to a particular industry group.

4. To investigate which of the existing Capital Structure theory is better to explain the Capital Structure policies and the financing behavior of FDI Companies in India.

1.5 Contribution of the Study

In the process of carrying out the literature survey, it was very difficult to find a study analyzing the Determinants of Capital Structure for FDI Companies. Hence, it is felt that this will be the study providing a detailed insight into the Capital Structure practices followed by these companies. Specific firm level data with detail accounting information for each firm have been used in the study. Apart from firm level analysis, an attempt has also been made to analyze the industry effect on firms' Capital Structure. The sample firms have also been divided on the basis of different industry groups they belong to and an attempt has been made to find out whether any differences in the Determinants of Capital Structure exist if a firm is affiliated to a particular industry.

It was difficult for the researcher to trace a study carried out of the Determinants of Capital Structure with such a large number of measures of the Capital Structure. (The study employs sixteen different measures of Debt Ratios) to capture the effect of possible Determinants of Capital Structure. The study uses variety of Debt measures dividing them on the basis of composition of debt –Short Term, Long Term and Total Debt ratios. One of objectives to do so is to find out whether determinants of Long-Term Debt and Total Debt differ from the determinants of Short-Term Debt. Based on available literature, the proxies used for each determinant of Capital Structure have been defined in several ways.

Another reason for this study being different is that it departs from previous studies by using a fixed sample of 140 companies (divided into 11 industry groups) covering a span of 18 years from 1990-91 to 2007-08. A balanced sample of 140 firms having accounting data consistently from 1990-91 to 2007-08 may provide insights into trends in financing behavior of firms over a period of time.

1.6 Organization of the Study

The study is divided in seven chapters.

The **present chapter** provides an introduction to the problem- The importance of Capital Structure decision and the rationale for selecting Foreign Direct Investment Companies in India for the purpose of the studying the Determinants of Capital Structure has been stated in the chapter. In this chapter, objectives of the study have been stated. In addition, the contribution of this study and organization of study with the detailed study plan have been discussed.

The **Second chapter** reviews some of the important studies on Capital Structure. The chapter is divided in three major sections. The first section identifies the various theories concerning the Capital Structure by surveying the various extension works conducted after the pioneering study of Modigliani & Miller[1] (1958). In the second section, contributions to the literature relating to Determinants of Capital Structure from studies done in India and abroad have been reviewed in detail. In the third section, a survey of general Capital Structure studies conducted in India and abroad has been done.

Third chapter presents the research methodology followed in the study to analyze the impact of potential Determinants of Capital Structure on Capital Structure practices of FDI Companies in India (firm wise and industry wise) and to study the trends in Capital Structure practices of FDI Companies in India. A detailed discussion on the hypotheses to be tested, procedure followed for sample selection along with the period of study, the statistical tools and techniques adopted for the analysis has been presented. The various measures of Capital Structure employed in the study have been discussed and defined. The chapter provides a theoretical background of the various Determinants that influence the Capital Structure decision of a firm. The Determinants selected for the purpose of studying their impact on Capital Structure of FDI Companies in India have been listed and the indicators for Determinants of Capital Structure employed in the study have been defined. The chapter also lists the Determinants of Capital Structure which are not selected for the study.

In the **Fourth chapter,** the trends in Capital Structure of FDI Companies in India are studied. Based on previous studies, variety of long term and short term debt measures have been used to analyze the trends and direction of changes in the Capital Structure practices of sample firms. Overall trends of the selected sample of FDI Companies in India as well as industry-wise trends in Capital Structure have been studied in detail.

The **Fifth chapter** seeks to empirically examine the relationship of Capital Structure and its Determinants with the objective of identifying the Determinants of Corporate

Capital Structure in India with reference to FDI Companies in India. Simple Linear Regressions and Multiple Regression Analysis of each Debt measure are conducted on the identified Determinants of Capital Structure. An attempt is made to analyze the impact of various variables on Capital Structure of the entire sample of 140 FDI Companies in India. Empirical analysis at firm level is undertaken to identify the Determinants of Capital Structure of FDI Companies in India.

In the **Sixth chapter**, Industry-wise empirical examination is done to examine the differences, if any, in the Capital Structure determinants of firms belonging to different industry groups.

In the **Seventh chapter** the main findings and conclusions derived from this study have been presented. Limitations of the present study have been stated and suggestions for future research work have been discussed.

This is followed by bibliography containing details of references used for the purpose of the study.

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CHAPTER - 2

LITERATURE REVIEW

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CHAPTER - 2

LITERATURE REVIEW

In this chapter some of the important studies carried out in the area of Capital Structure have been reviewed. The chapter is divided into three sections. The first section in the chapter identifies the various theories concerning the Capital Structure by surveying the various extension works conducted after the pioneering study of Modigliani & Miller[1] (1958). In the second section, contributions to the literature from India and abroad relating to Determinants of Capital Structure have been surveyed. The third section reviews other general studies on Capital Structure in India and abroad. .

SECTION I

2.1 Review of Capital Structure Theories

There have been several conflicting theories on Capital Structure and its impact on valuation of firm. Some of the theories suggest that Capital Structure does not matter and value of a firm does not depend on its financing mix, whereas some theories suggest that Capital Structure of a firm does matter and optimal Capital Structure does exists. In this section, different competing theories of Capital Structure have been presented.

2.1.1 Net Income Theory (NI)

Durand David (1952)[1], who advocated this theory suggested that a firm can increase the value of the firm and reduce the overall cost of capital by increasing the proportion of debt in its Capital Structure to the maximum possible extent. The Net Income Theory is based on the assumptions that there are no taxes, the cost of debt is cheaper than the cost of equity and the use of debt does not change the risk perception of investors. By increasing the proportion of debt funds in its Capital Structure, a firm can reduce its overall cost of capital, leading to an increase in value of firm. The optimum Capital Structure of a firm will be attained when the firm is financed with 100% debt and at that point the value of the firm will be maximum and overall cost of capital minimum.

2.1.2 Net Operating Income Theory (NOI)

This theory also has been suggested by Durand David (1952)[1], but is exactly opposite to Net Income Theory (NI). According to this theory, the overall cost of capital remains constant to various levels of debt in the Capital Structure. An increase in the level of debt increases the level of risk for the shareholders and they start expecting higher returns to compensate the higher risks. The increase in the equity capitalization rate offsets the advantage of cheaper debt and thus the overall cost of capital remains the same. This suggests that the Capital Structure decision of a firm is irrelevant and the firm cannot change the overall cost of capital by changing the mix of debt and equity. The overall value of the firm is independent of its Capital Structure decision.

2.1.3 Modigliani and Miller (MM) Theory (without taxes)

This theory is similar to Net Operating Income Theory. According to Modigliani & Miller (1958)[2], Capital Structure of a firm does not determine its market value implying that the Capital Structure decision is irrelevant. The cost of capital and value of firm are constant for all degrees of leverage. The cost of equity rises exactly to offset the advantage of reduced cost of debt and thus value of firm remains constant and unaffected by its Capital Structure. With no taxes, the cut off rate for investment purpose is completely unaffected by the Capital Structure and will be equal to its weighted average cost of capital. This theory is based on assumptions of a perfect capital market, no transaction costs, homogeneous risk class i.e. all investors have homogeneous expectations, firms can be grouped into equivalent risk classes on the basis of risk in term of expected earnings, no corporate taxes and dividend payout ratio expected to be hundred percent.

2.1.4 Modigliani and Miller (MM) Theory (with corporate taxes)

Modigliani and Miller (1963)[3] revised their earlier theory by considering the implication of corporate taxes on the Capital Structure. They recognized that on account of the tax savings generated due to debt, the value of a levered firm will be higher than unlevered firm. With introducing debt in the Capital Structure, the cost of equity will rise but at a lesser rate than what it have been in absence of taxes. The optimal Capital Structure will be the one at which the firm's value is maximum and the overall cost of capital is minimum. This can be achieved with hundred percent debt financing. This theory is similar to Net Income Theory.

Although Modigliani and Miller were criticized for their various unrealistic assumptions and proposition of maximizing firms' value by using 100% debt in their Capital Structure, their theory is considered as a pioneering study which resulted into continuing theoretical debate over the issue of relevance of Capital Structure decision for valuation of a firm. Since then, a number of studies have been undertaken on various aspects of Capital Structure.

2.1.5 Traditional Approach to Capital Structure

Soloman Ezra (1963)[4] suggested that a firm can reduce the overall cost of capital and increase the total value of firm by increasing the proportion of debt funds in its Capital Structure, but only up to a certain level. Any increase in debt beyond a particular point may result in an increase in cost of equity. Through a judicious use of debt and equity mix, a firm can reduce its overall cost of capital and increase the value of firm. Soloman Ezra (1963)[4] summarized the result of change in the debt equity mix on the total value of firm in following three phases:

- In the first phase, with the use of debt, value of firm increases, cost of equity rises slightly to some extent with debt, but the advantage of debt offsets the increased cost of equity. Cost of debt remains constant or rises very negligibly.
- In the second phase, beyond a certain level of debt, the cost of equity starts rising disproportionately because of increasing risk and additional debt has insignificant impact on the cost of capital or value of firm. Cost of capital starts rising after falling initially, and there exists a critical point where the cost of capital is the least. At this point in this phase, optimum Capital Structure will exist where overall cost of capital will be minimum and value of firm will be maximum.
- In the third phase, any further increase in debt would lead to disproportionate increase in cost of equity thereby increasing the overall cost of capital which would offset any additional advantage of debt.

  Traditional theory was considered as midway approach to the two extreme views of net income and net operating income theories. Net Income Theory proposed a financing mix with 100% debt whereas Net Operating Income Theory suggested that overall cost of capital remains constant for all levels of leverage. According to traditional theory, a firm could maximize its value by using debt, but only up to a certain extent, until the use of debt reduces overall cost of capital as beyond this limit, additional debt would increase the overall cost of capital.

2.1.6 Trade-Off Theory / Static Trade-Off Theory

The classical explanation of the proposition goes back to Kraus & Litzenberger (1973)[5]. They proposed that an optimal Capital Structure can be achieved by equilibrium between the tax saving benefits of debt and the dead-weight costs of bankruptcy. Increasing the proportion of debt in the financing mix results in tax advantage and hence debt becomes a cheaper source of fund than equity, but at the same time it results in increase in costs of financial distress and agency costs of debt. According to this theory, although the interest payments on debt provide with the required tax shield, a company needs to balance the costs (Costs of financial distress, agency costs) and the benefits of debt (tax deductibility) while deciding the level of debt in its Capital Structure. According to Myers (1984, page 576)[6] there exists a, "static trade-off framework, in which the firm is viewed as setting a target debt-to-value ratio and gradually moving towards it, in much the same way that a firm adjusts dividends to move towards a target payout ratio".

So according to trade-off theory, a company decides the level of debt and equity in its Capital Structure by balancing the tax saving benefits of debt with the following two costs:

i) Costs of Financial Distress: Financial Distress costs can be direct costs resulting due to bankruptcy such as auditors' fees, legal fees, management fees and other payments, loss due to distress sale, reduction in value of assets due to non use etc. They can also be in the form of indirect costs if the bankruptcy has to be avoided. Manager may start producing lower quality goods, provide inadequate after sales service, short-term loans from contractors and banks might be obtained at high cost of capital to repay debt. This may lower firm value as the firm starts loosing customer trust and goodwill. Higher the proportion of debt in the financing mix of a firm, greater will be the financial distress costs and these costs may decrease the value of the firm, thus offsetting the advantage of tax shield of debt.

ii) Agency Costs: Jensen & Meckling (1976)[7] proposed that a firm incurs two types of agency costs-cost associated with the outside equity holders and cost associated with the presence of debt in Capital Structure in their agency cost theory.

According to this theory, in a highly leveraged firm there will be an agency relationship between shareholders and debt lenders. Their interests will be conflicting as debt lenders are concerned only with their repayment of principal amount with interest and are indifferent to the risks associated with business. Whereas, shareholders might tend to invest in risky projects to increase their wealth but at the expense of debt lenders. If the firm is on the verge of bankruptcy, then even the debt lenders are prone to risk as the firm may not be able to repay them. So while lending these firms, the lender's to protect themselves, insert several restrictive covenants like restricting declaration of dividend, nominating directors on board, restrictions on further loans and so on. There may be conflict between shareholders and their managers also. "The agency conflict between the owner-manager and outside shareholders are derived from the manager's tendency to appropriate perquisites out of the firm's resources for his own consumption", Jensen & Meckling (1976, page 12)[7]. To control these agency costs created by managers who tend to waste free cash flows on perquisites and incorrect investments, firms instead would prefer to use these free cash flows created out of profits to make debt payments and thus resort to more debt financing in their Capital Structure.

According to Trade-Off theory, highly profitable firms will have high debt ratios because chances of bankruptcy are less. Thus trade-off theory suggests a positive relationship between profitability and leverage. It also states that large firms with tangible assets tend to borrow more than small firms. If the firms' earnings are volatile, they may borrow less. The theory predicts that existence of tax shields will lead to increase in debt. Higher growth rate would mean greater chances of bankruptcy and hence Trade-Off theory suggests negative relationship between high growth rate and borrowings of a firm. The theory predicts negative relationship between dividend payout ratio and debt ratio as the theory implies that a firm will be in position to pay higher dividends because of low levels of debt in their Capital Structure.

2.1.7 Dynamic Version of Trade-Off Theory

The most accepted version of this theory can be traced back to Fischer *et.al (*1989)[8]. They developed a model of dynamic Capital Structure choice in the presence of recapitalization costs. Dudley (2007,page 3)[9], quoting Fischer *et.al* (1989)[8] also put forth that according to dynamic trade-off models, firms have an optimal leverage range within which they let their leverage ratios vary and undertake Capital Structure adjustments when leverage reaches either of the two boundaries defining the range. According to Zhao & Susmel (2008, page 5)[10], "The dynamic trade-off model is based on the idea that firms cannot instantaneously achieve their target leverage, rather they adjust their realized debt-equity ratios over time".

Instead of treating agency cost theory separately, in this study, the agency costs have been incorporated in Trade-Off theory itself as it had been pointed out by Frank & Goyal (2007, page 6)[11] that , "The term trade-off theory is used by different authors to describe a family of related theories. In all of these theories, a decision maker running a firm evaluates the various costs and benefits of alternative leverage plans. Often it is assumed that an interior solution is obtained so that marginal costs and marginal benefits are balanced".

2.1.8 Signaling Theory / Asymmetric Information

"The manager of a firm maximizes his incentive return by choosing a financial package that trades off the current value of the signal given to the market against the incentive consequences on that return", Ross (1977,page 34)[12]

It was assumed by Modigliani and Miller (MM) in their propositions that information is symmetrical, there is no information gap and investors have access to the same information and have homogeneous expectations about a firm's future as its managers. In reality managers possess more information than shareholders about a firm's operations and firm's future prospects. They can share this information or withhold it if they think that it is in best interest to do so. The choice of firm's Capital Structure signals to outside investors the information of insiders. In the financial signaling models, the firm can use its Capital Structure to signal the prospects of its investment decisions and growth opportunities thus support and enhance its market value.

The literature implies that firm's investment decisions are one of the determinants of growth opportunities. If a mature and well established company tries to raise funds by issuing shares, prospective investors may perceive it as negative signal. If the firm is overvalued, the prospective investors would know that the existing shareholders do not want to bear the burden of decline in market value alone; hence the firm is issuing equity. Whereas a new firm which is undervalued but whose growth prospects are good may issue debt because they know that market value will increase in future due to good growth opportunities and hence do not want their share of profits to get diluted. According to this theory therefore low growth and mature (age) firms may be negatively related to debt ratios and new firms with substantial growth opportunities may be positively relate to debt ratios.

2.1.9 The Pecking Order Theory

Trade-Off theory is said to be a competitor theory to the Pecking Order Theory. The proposition of Pecking Order Theory can be traced back to the year 1961 when Gordon Donaldson[14] pointed out that firms follow a particular sequence of financing. They use internally generated cash flow as principal source of long-term financing. If the firm has insufficient cash flow from internal sources, it resorts to debt financing and as a last option a firm will use externally generated funds, i.e. equity funds.

Myers (1984)[6] extended the work of Gordon Donaldson (1961)[13] by applying the term "pecking order" to Gordon Donaldson's description of firms' sequence of financing. They considered their theory as, 'Modified Pecking Order Theory', and stated that companies prioritize sources of financing from internal financing to debt and finally to equity and prefer to raise equity as a financing means of last resort. Their modified Pecking Order Theory was based on the concept of asymmetric information and recognized the costs of financial distress. Their theory also assumed that firms follow sticky dividend policies which mean companies set absolute dividends and stick with those dividends through good times and bad.

In their modified Pecking Order Theory, Myers (1984)[6] stated that firms set out target dividend payout ratios which can be met by internally generated funds. They avoid financing projects by issuing equity or other risky securities, keep their debt levels within safe limits to avoid risk of default and to avoid costs of financial distress. Myers (1984)[6] used the term ' financial slack', which means firms try to maintain and create financial slack in the form of reserve borrowing power which can be used to issue safe debt if needed. He finally stated that due to sticky dividend payout ratios and fluctuations in investment opportunities, firms may exhaust their ability to issue safe debt and then in such cases would follow the last stage of pecking order of financing, firms will issue less risky securities first like risky debt or convertibles before issuing common stock.

The Pecking Order Theory suggests that highly profitable firms, having good cash flows may have low debt ratios because they do not need external financing as they have sufficient retained earnings to fall back upon to finance their investments. Firms with growth opportunities (future investments) may issue equity suggesting negative relationship between growth and leverage. When the firm's earnings are volatile, firms may have less leverage. The age of a company should be negatively related to its leverage because mature firms may find dearth of good growth opportunities and hence may not need funds. Higher dividend payout means greater need of funds which suggests positive relationship between dividend payout and leverage.

2.1.10 Debt as a Disciplining Device

Harris & Raviv (1990)[14] presented a theory of Capital Structure based on the idea that debt allows investors to discipline management and provides information useful for this purpose. They believed that investors use information about the firm's prospects to decide whether to liquidate the firm or continue current operations. Managers do not always behave in the best interests of their investors and therefore need to be disciplined. They do not provide detailed information to investors and also do not want the firm to be liquidated. Hence investors use debt to generate information and monitor management and debt lenders may enforce liquidation of firm if needed to protect their interests. Harris & Raviv (1990)[14] developed static and dynamic models of Capital Structure based on their above stated propositions. Their static model stated that debt generates in two stages. Repayment of debt is assumed to be a sign of income exceeding the payments and investors revise upward their beliefs about firm quality whereas failure to repay debt may lead investors to a costly investigation that may provide investors more information about firms' quality. Optimum debt level exists when there is a Trade-Off between cost of investigation generated by default in payments and improvements in the operating policy.

2.1.11 Market Timing Theory:

According to Baker & Wurgler (2002)[15], who put forward this theory, Capital Structure evolves as the cumulative outcome of past attempts to time the equity market. "In corporate finance, equity "market timing" refers to the practice of issuing shares at high prices and repurchasing at low prices. The intention is to exploit temporary fluctuations in the cost of equity relative to the cost of other forms of capital". Baker & Wurgler (2002, page 3)[15]. The authors tried to study how market timing affects the Capital Structure in this paper. They used the market-to-book ratio to measure the market timing opportunities perceived by managers. Their sample consisted of COMPUSTAT firms for which they could determine the IPO date which was necessary to examine the behavior of leverage around the IPO. They used the IPO date to study the evolution of leverage from a fixed starting point. They found out that low-leverage firms were those who raised funds when their valuations were high, and high-leverage firms were those that raised funds when their valuations were low. They observed that fluctuations in market valuations had large effects on Capital Structure that persisted for at least a decade. According to this theory, there is no optimum Capital Structure.

2.2 Empirical Studies Testing Capital Structure Theories: A Review

Several studies tried to test the propositions of above stated theories and came up with contradictory results:

Testing Static Trade-Off against Pecking Order

Shyam-Sunder & Myers (1994)[16] tested the static trade-off against pecking order models of Capital Structure of balanced panel of 157 U.S firms for a period from 1971 to 1989. The results implied that Pecking Order Theory was able to explain the financing behavior of firms better than the target adjustment models as suggested by static Trade-Off theory. They concluded that even if companies had well defined optimal Capital Structure, managers did not seem to be interested in getting there.

Information Asymmetry and Signaling Approach with Cash Flows

Goswami *et.al* (1995)[17] examined the impact of informational asymmetries on the design of debt contracts. The role of debt maturity, coupon payments and dividend payout restrictions in signaling a firm's private information has been examined in the study. They divided the cash flows that a firm receives in two dates, an intermediate date and at a terminal date. They assumed that the firm has private information regarding these cash flows. The degree of information asymmetry regarding these cash flows may vary. They concluded in their study that if asymmetry of information exists regarding long term cash flows, the firm prefers financing with covenanted long term debt that restricts dividend payments. If there is information asymmetry regarding short term cash flows, the firm may prefer either short term debt or opt for uncovenanted long term debt that does not restrict dividends. If information asymmetry is evenly spread across dates, firm resort to short term debt.

Testing Static Trade-off against Pecking Order

Babu & Jain (1998)[18] tested the pecking order hypothesis with reference to Capital Structure practices in India. Their sample was based on non government public limited companies listed on Bombay Stock exchange. The study was questionnaire based and they could collect 91 responses which formed their sample. The study confirmed the existence of pecking order followed by Indian firms in their financing strategy and there was a marked preference to long term debt by firms in India.

Information Asymmetry, Free Cash Flow and Leverage

Mohanty (2000)[19] made an attempt to test whether the predictions of theories of Capital Structure based on information asymmetry are applicable to Indian companies. They used ordinary least square regression to test the relation of profitability, information asymmetry and free cash flows on the leverage of Indian companies for the period of three years from 1996 to 1998. They found out that most profitable companies opted for low leverage, relationship between information asymmetry and leverage negative opposite of what Pecking Order Theory predicts, and could find no conclusive evidence regarding relationship between free cash flow and leverage.

Testing Static Trade-Off against Pecking Order

Chirinko & Singha(2000)[20] questioned validity of inferences based on Shyam-Sunder & Myers' (1994)[16] testing strategy. They felt that their elegantly simple test generated misleading inferences when evaluating plausible patterns of external financing. Whereas in their study they felt the need of alternative tests to differentiate between competing hypothesis of pecking order or Trade-Off hypothesis.

Testing Static Trade-Off and Pecking Order Prediction about Dividend Payout and Debt:

Fama & French (2002)[21] tested the validity of Trade-Off and pecking order predictions about dividend and debt. The main aim of the study was to examine how long term leverage and dividend payout ratio differ in firms with the main driving variables; 'profitability', and 'investment opportunities', as the main driving factors as proposed by the two models. They also investigated interdependence of long term leverage and dividend payout and how financing decisions respond to short term variations in earnings and investment. Their sample covered the period from 1965 to 1999 and on average included more than 3,000 firms. Both the models predict that profitable firms have higher dividend payouts and firms with more investments have lower payouts. The study found out positive relation between leverage and firm size, negative relation between non-debt tax shields and leverage. Profitability was negatively related to leverage thus supporting Pecking Order Theory but contradicting Trade-Off hypothesis.

Capital Structure and Market Power

Pandey I.M (2002)[22] argued that the relation between Capital Structure and market power is cubic and relation of profitability and Capital Structure is 'U' shaped. They used 'Tobin Q'- the ratio of market value of the firm to replacement costs of assets to measure market power. The study employed a sample of 208 Malaysian companies listed on Kuala Lumpur stock exchange having data for the period from 1994 to 2000. Using panel data model, effect of Tobin's Q, profitability, growth, unsystematic risk, size, ownership and tangibility is assessed on total debt-asset ratio, the dependent variable. They examine that at lower and higher ranges of Tobin's Q, firms use high debt and firms reduce their debt when Tobin's Q is at intermediate range which proved their assumption of cubic relationship between Capital Structure and market power. The belief that the relation of profitability and Capital Structure is 'U' shaped was confirmed as there seemed to be a trade-off between the effects of asymmetric information, agency costs and tax benefits. They also found out that size and tangibility had positive relationship and systematic risk and ownership have a negative relationship with Capital Structure.

Testing Static Trade-Off against Pecking Order

Frank & Goyal (2003)[23] tested the Pecking Order Theory on publicly traded American firms for the period from 1971 to 1998. They tried to compare their findings with the results of Shyam-Sunder & Myers (1994)[16]. They also tried to match their sample selection by selecting firms which continuously report on necessary variables for the study period and their sample consist of 768 firms with 19 years of data for each firm. Despite the differences in sample size, they could replicate the coefficients on the financing deficit reported by Shyam-Sunder & Myers (1994)[16] and the results supported the Pecking Order Theory. They also considered a broader unbalanced population of firms to test whether the results differ. The R^2 on broader population of firms had a limited ability to forecast leverage behavior. They concluded that while large firms could demonstrate some aspects of pecking order behavior, the evidence was not robust to the inclusion of conventional leverage factors and financing deficit is less important in explaining net debt issues over time for firms of all sizes.

Testing Static Trade-Off against Pecking Order

Sogorb-Mira *et.al* (2003)[24] investigated the application of pecking order versus trade-off hypothesis on a sample containing 6482 Spanish small and medium companies for the period 1994–1998 using panel data methodology. To test the Trade-Off model, they hypothesized that tax rate, tangibility of assets, size of company would be positively related to leverage and non-debt tax shields, default risk, companies with greater growth opportunities and profitability would have negative impact on leverage. They also assumed that firms' liquidity will affect its Capital Structure. To test the pecking order hypothesis, they hypothesized that firm's volume of cash flow and age would be negatively related to leverage whereas firms with strong growth prospects will have positive relationship with leverage. The hypothesis put forward for Pecking Order Theory was confirmed and as regards to Trade-Off theory, except for factors default risk, asset structure, profitability and liquidity whose results showed insignificant impact, other factors confirmed the predictions of the theory. The study found evidence that firms attempted to achieve a target or optimum leverage.

Testing Static Trade-Off against Pecking Order

Tong & Green (2005)[25] tested the Pecking Order or Trade-off Hypothesis on top 50 Chinese listed companies listed on Shanghai & Shenzhen stock exchange. They tested three facets of corporate financing where Trade-Off and pecking order theories give different predictions: the determinants of leverage (profitability, size and growth), the association between leverage and dividends and the effect of these theories on corporate investment. The study with the help of ordinary least square regressions concluded that: a) A significant negative correlation between leverage & profitability b) a significant positive correlation between current leverage and past dividends favoring pecking order hypothesis and investment model was found inconclusive.

Dynamic Optimal Capital Structure Model

Titman & Tsyplakov (2005)[26] tried to develop a Dynamic Capital Structure model that allowed them to observe how target debt ratios are determined and how they change overtime. Their model endogenously determined the firm's optimal investment and financing strategies as functions of an exogenous state variable that determine the price of the firm's product. Their model incorporated continuous investment and financing choices as well as bankruptcy costs, financial distress costs and transaction costs. They use their model to create a panel of simulated data that includes model generated debt ratios that are determined by the firm's cash flow and investment history as well as by its optimal Capital Structure choice. Their results confirmed the belief that firms slowly move towards target debt ratios. They point out that in their earlier study, 'Titman and Wessels (1988)[32], they had examined actual debt ratios that change over time rather than their targets. They recommend that firms that are subject to financial distress costs as well as those without conflicts of interest between debt holders and equity holders should adjust more quickly towards their target debt ratios.

Trade-Off and Pecking Order: (A survey)

Frank & Goyal (2007)[11] conducted a survey of previous literature to understand the facts identified until then on trade-off and Pecking Order Theory. They believed that several explanations like taxes, bankruptcy costs, transaction costs, adverse selection, agency conflicts have been made for the use of debt in the Capital Structure and these beliefs have been combined into trade-off theory and the Pecking Order Theory of Capital Structure. They found out that empirical literature supports a number of generalizations for understanding actual leverage and they name these facts as 'stylized facts' in their study. They felt the need of one unifying model which could incorporate all the 'stylized facts' in it to understand Capital Structure as the standard theories oppose some of the known facts and are not without flaws.

Dynamic Theory of Capital Structure with Optimal Leverage Range

Dudley (2007)[9] developed an empirical model to find out how the Determinants of Capital Structure affect the two boundaries that define the firms optimal leverage range.

To test the implications of dynamic theory of Capital Structure, they use a non-linear model with thresholds that vary with firms' profitability, the risk free interest rate, investment opportunity set, share price volatility, asset tangibility and size. They conclude that profitability and interest rates imply a narrower debt ratio range and higher volatility imply a wider debt ratio range. Assets in place firms respond sooner to decreases in leverage than growth firms. They also conclude that proportional adjustment costs play an important role in determining the size of Capital Structure adjustments.

Testing Pecking Order Theory in Context of Maturing Long Term Debt

Hovakimian & Vulanovic (2008)[27] tested the Pecking Order Theory by examining how firms finance maturing long-term debt. Their results support the prediction of the Pecking Order Theory regarding the use of internal funds and debt financing. Managers first finance their maturing long-term debt with internal funds and then turn to new debt issuance. They could find very strong support for the Pecking Order Theory among small high growth firms as well as among debt capacity constrained firms which contrasted the results of earlier available literature. They found out that on an average, each marginal dollar of maturing long-term debt was fully financed with new debt issuance.

Testing Dynamic Trade-Off Theory using Kalman Filter

Zhao & Susmel (2008)[10] used a Kalman filter in order to test the standard dynamic trade-off model of Capital Structure since Kalman filter allows to directly estimate the unobservable target debt-equity ratio. They tested the structural dynamic models for individual firms in order to directly study the number of firms in which the dynamic trade-off model cannot be rejected. Their analysis indicates that the dynamic trade-off model cannot be rejected at the standard 5% level- for 32% to 52% of the firms in the sample. They also tried to test if Kalman filtered estimated target debt-equity ratios were related to the variables like volatility of cash flows, product uniqueness, tangible assets, size, profitability, capital expenditures, market-to-book ratio, z score, capital expenditure, cash position, tax shield, tax rates, and mitigation of free cash flow problem. They could find support for their estimates.

Information Asymmetry and Signaling Approach through the use of Convertible Bonds

Yan (2009)[28] believed that information asymmetries exist between firms' insiders and outside investors including shareholders and the managers know the true internal projections for the chances of success for firm projects. Outside investors rely on the firms' actions in order to gain information known only to firm insiders and the choice of Capital Structure serves as a signal of firms' success. In this study, through the use of a sample of hundred convertible bonds issued from 1990 to 2007, the author have tried to examine the market's reactions to changes in the Capital Structures of the firms and whether the reactions differ if firms are of different sizes. By regressing the abnormal returns of the firms' stock prices on the conversion premium, the study tried to capture the market's responses to the declaration of a convertible issue. The study concluded that more debt-like convertible issuances signal more positively and result in higher abnormal returns. This effect was larger for smaller firms than for larger firms indicating that smaller firms may be relying more on signaling than their larger counterparts, due to a greater information asymmetry for the smaller firms.

Testing Static Trade-Off against pecking order in context of issuing decisions and repurchase decisions:

Jong *et al.* (2009)[29] try to study the observed relevance of both pecking order and Trade-Off theories when they have contradictory predictions on firms' debt-equity decision particularly for issuing decisions and repurchase decisions.

According to Jong *et al.* (2009, page 4)[29], "For issuing decisions, the theories disagree when the current debt ratio is above the target ratio but below the debt capacity. In such case, the static Trade-Off theory predicts a decrease of leverage, whereas the Pecking Order Theory predicts that a firm would still increase leverage. For repurchase decisions the theories disagree when the firm's current debt ratio is below the target debt ratio. The pecking order model predicts that the firm repurchases debt and therefore decreases leverage, whereas the static Trade-Off model predicts a move towards the target and therefore an increase of leverage". They try to examine that out of the two theories, which can provide correct predictions. Their sample consist of 2259 U.S firms for a study period from 1985 to 2005. They find that the Pecking Order Theory provides better explanation of firms' issue decisions than the static Trade-Off theory and in case of repurchase decisions; the static Trade-Off theory is a better forecaster of firms' financing decisions.

Target Capital Structure

Hovakimian *et.al* (2009)[30] observed the speeds of adjustment to target Capital Structure examined at points in time when the benefits of adjustment to target were likely to exceed its costs. Both book and market value based measures of leverage have been used in the analysis. The independent variables used to identify the target debt ratio are firm size, asset tangibility, market-to-book, research and development expenses, and industry median leverage ratio. They do not find evidence for full adjustment to target Capital Structure. They found out that the estimates of the speed of adjustment to target leverage were significant but low. The speeds of adjustment were highest for firms in the highest maturing debt group but never come close to full adjustment. The authors concluded that firms can have target range of Capital Structure but no single target debt ratio to which they ever want to fully adjust.

Based on the examination of the development in the theory of capital structure, following is the bird's eye view on the phase wise development of major theories of capital structure:

Table 2.1		
Development of Major Capital Structure Theories		
Year	**Capital Structure Theory**	**Author**
1952	Net Income Theory	David Durand
1952	Net Operating Income Theory	David Durand
1958	Modigliani & Miller (MM) Theory (without taxes)	Modigliani & Miller
1961	Pecking Order Theory	Gordan Donaldson
1963	Modigliani and Miller (MM) Theory (with corporate taxes)	Modigliani & Miller
1963	Traditional Approach to Capital Structure	Soloman Ezra
1973	Static Trade-Off Theory	Kraus & Litzenberger
1976	Agency Costs Theory	Jensen & Meckling
1977	Signalling Theory/Asymmetric Information	Ross S.A
1984	Modified Pecking Order Theory	Stewart C. Myers
1989	Dynamic Trade-Off Theory	Fischer *et.al*
1990	Debt as a Disciplining Device	Harris & Raviv
2002	Market Timing theory	Baker & Wurgler

SECTION II

2.3 Literature Related to Determinants of Capital Structure

2.3.1 Foreign Studies

Ferri & Jones (1979)[31] investigated the relationship between a firm's financial structure and its industry class, size, variability of income and operating leverage. They used a unique method – a taxonomy of firms that is based on the firms' actual financial behavior. Using 'Howard-Harris Algorithm', each firm was assigned to one of a set of leverage classes on the basis of the firms' use of debt. This taxonomy of firms formed the basis of their subsequent analysis where investigation of associations between attributes of firms and leverage classes was done. They concluded that although industry and financial structure are not totally independent of each other, the dependence is, at best modest and indirect. A firm's use of debt is related to its size but the relationship is not positive and the study revealed nearly curvilinear relationship between size and leverage. Business risk was not associated with firm's leverage. The expected negative relationship between operating leverage and firm's use of debt as suggested by financial theory was confirmed.

Titman & Wessel's (1988)[32] conducted a pioneering study using factor-analytic technique for estimating the impact of determinants- collateral value of assets, non debt tax shields, growth, uniqueness, industry classification, size, volatility and profitability on various measures of leverage. Six measures of leverage were used in the study. They were - long term, short term and convertible debt divided by market and book value of equity. 469 U.S manufacturing firms were selected for the study and the sampling period was nine years from 1974 to 1982, divided into three sub periods of three years each. It was found out that debt levels were negatively related to uniqueness of firm's line of business, transaction cost an important determinant of leverage, short term debt ratios were negatively related to firm size and non debt tax shields, volatility, collateral value & future growth did not have any effect on firm's leverage.

Lee & Kwok (1988)[33] tried to find out whether any difference existed in Capital Structures of U.S based multinational corporations (MNCs) and U.S domestic corporations (DCs), and if so, tried to empirically examine the causes of difference.

The study examined the impact of international environmental variables- political risk, international market imperfections, complexity of operations, opportunities for international diversification, foreign exchange risk and local factors of host countries on firm related Capital Structure determinants which in turn affect the MNC's overall Capital Structure. Agency costs and bankruptcy costs were considered as Capital Structure determinants. Kruskal-Wallis test was applied to test whether U.S based MNCs and DCs differ with respect to agency costs, bankruptcy costs and overall Capital Structure. A two-way ANOVA test was employed to control the industry and size effects separately so as to ensure that the differences between MNCs and DCs were not simply due to size or industry differences. The major findings were: (a) MNCs tended to have higher agency costs of debt than DCs. (b) MNCs appeared to have lower bankruptcy costs than DCs, but the difference largely disappeared when the size effect was controlled (c) MNCs tended to have lower debt ratios than DCs.

Most of the major empirical work done on Capital Structure (even related to testing of various Capital Structure theories) until then was based on firms in the United States alone and **Rajan & Zingales (1995)**[34] wanted to test the robustness of these findings outside the environment in which they were uncovered. Therefore, to make international comparisons, they used the data from G-7 countries to find out whether the choice of Capital Structure in other countries is based on factors similar to those influencing Capital Structures of U.S.

They employed five different ratios -total liabilities to total assets , total debt to total assets, total debt/ net assets, total debt / total (debt + equity) and EBIT / interest expense as their measures of leverage. The stock measures in ratios were computed at book value and market value. The determinants of leverage selected for the purpose of study were - tangibility of assets, the market to book ratio, firm size, and profitability of firms. They concluded that at an aggregate level, firm leverage is more or less similar across the G-7 countries and that factors that influenced Capital Structures in U.S affected firm leverage in other countries as well.

Lee *et.al* (1999)[35] analyzed the characteristics and Determinants of Capital Structure choices of Korean firms during the period from 1981 to 1997 based on a panel data set consisting of over 10,000 firm-level observations. The sample firms were classified into five largest chaebols, 6-30th largest chaebols, and non-chaebol firms to evaluate the differences if any in their choices of Capital Structure. Chaebols (a business group) comprise of many subsidiaries generally owned and controlled by a single family or by companies within the family's control. The determinants of leverage employed in the study were firm size, growth rate, tangible fixed assets, profitability, industry classification and group affiliation. Five leverage measures for the dependent variable used in the study were: Leverage (Total Debt / Total Assets), Domestic Leverage (Total Domestic Debt / Total Assets), Foreign Leverage (Total Foreign Debt / Total Assets), Long-term Leverage (Total Long-term Debt / Total Assets) and Short-term Leverage (Total Short-term Debt / Total Assets). It was found out that financing decisions of Korean firms were influenced by firm size, growth rate, tangible fixed assets, and profitability. There were major differences in the Capital Structure choices between chaebol and non-chaebol firms even after controlling for proposed determinants and chaebol affiliated firms had higher leverage than non-chaebol firms in Korea.

Bevan & Danbolt (2000)[36] analyzed the dynamics in the Capital Structure of 1054 listed non financial UK companies from 1991 to 1997 using a Panel data set. Their study was unique as they used a variety of short term and long term components (sub components of debt, individual components of debt rather than aggregate components) for the analysis. All gearing measures are scaled down by book value of total assets. Growth opportunities, size, profitability and tangibility were selected as explanatory variables. They also tried to study the change in the influence of the various Capital Structure determinants over time. Using fixed effect panel model with interactive dummies (regressions), Ordinary Least square Regressions and Cross sectional Regressions, it was found out that companies with high level of growth opportunities tended to employ long term & short term debt, but changed to equity finance from debt over the sample period. Larger companies employed long term debt and smaller companies short term debt. Tangibility was positively related to long term debt and negatively related to short term debt. Their results suggested that the nature of credit market in the UK had notably changed during the sample period with large companies using less bank finance and banks increasingly lending to smaller firms.

Major empirical work on Capital Structure was done on data derived from developed economies and **Booth *et. al* (2001)**[37] made a significant contribution as they tried to assess portability of Capital Structure hypothesis across 10 developing countries with different institutional structures.

The main focus of the study was to find out whether corporate financial decisions differ significantly between developing and developed countries and whether the factors affecting individual companies Capital Structures are similar between developed and developing countries. They also wanted to find out whether the predictions of conventional Capital Structure models can be improved if the nationality of a company is known.

The data for large publicly traded firms of developing countries: India, Pakistan, Thailand, Malaysia, Turkey, Zimbabwe, Mexico, Brazil, Jordan and Korea were collected from International Finance Corporation for the period 1980-1990. They used regression analysis to assess the impact of various macroeconomic variables (country factors) using three debt measures viz; Total debt ratio, Long term book debt ratio and Long term market debt ratio. They found that all the three debt ratios varied negatively with equity market capitalization and except for the long term market debt ratio, the debt ratios vary positively with the proportion of liquid liabilities to GDP. They found that companies can borrow against real, but not inflationary growth prospects.

For testing the Capital Structure differences among countries using firm specific variables, they considered the three models of Capital Structure: The static Trade-Off model, the pecking order hypothesis and the agency theoretic framework. They used cross sectional regression analysis to measure Capital Structure determinants – firm's tax rate, standard deviation of return on assets, tangibility of assets, natural logarithm of sales, return on assets, and market to book ratio. They concluded that the variables that are relevant for explaining Capital Structures in United States and European countries are also relevant in developing countries despite differences in institutional factors across developing countries. They finally concluded that though in general debt ratios are affected by same type of variables both in developing and developed countries, there might be significant institutional differences that affect the importance of independent variables. Knowing the country of origin is at least as important as knowing the size of the independent variables for both the total and long term book debt ratios.

Pandey I.M (2001)[38] examined the influence of growth, investment opportunity, profitability, size, risk and tangibility on different type of debt ratios of 106 Malaysian companies, utilizing the data for 16 years from 1984 to 1999. The entire period from 1984 to 1999 was divided into four sub periods of four years each – 1984-87, 1988-91, 1992-95 and 1996-99 corresponding with downturn, upturn, stability and growth and downturn of general economic conditions in Malaysia. The results of the pooled OLS regressions showed that growth and size variables had significant positive relationship and profitability a significant negative relationship with all types of debt ratios. Risk was negatively related with long term debt ratios and positively related with short term debt ratios. Tangibility had negative association with book value and market value short term and market value long term debt ratios. The results were normally consistent with the results of fixed effect estimation with the exception that the risk variable lost its significance. Investment opportunity had no significant impact on the debt policy of Malaysian companies. Profitability had a consistent negative relationship with all types of debt ratios in all periods and under all estimation methods and therefore the study confirmed the Capital Structure prediction of the pecking order hypothesis in an emerging capital market.

Bancel & Mittoo (2002)[39] conducted a questionnaire based survey on managers of 710 firms from seventeen European countries on their choice of Capital Structure and the determinants of the Capital Structure of firms. Factors influencing Capital Structure policies of firms were divided into three sets. The first set of factors was based on the propositions of different Capital Structure theories. The second set of factors were based on decision about timing of issue of raising capital and the third set was based on commonly held beliefs among managers about impact change in financing mix on the earnings. Financial flexibility, credit rating and tax advantage of debt are the most important factors influencing the debt policy while the earnings per share dilution is the most important concern in issuing equity. The level of interest rate and the share price are important factors in selecting the timing of the debt and equity issues. Hedging consideration appeared to be the driving factor in raising capital abroad. The study provided little evidence about firms following industry norms of Capital Structure.

Huang & Song (2002)[40] conducted an empirical analysis on the Determinants of Capital Structure of Chinese listed companies over a period of 1994 to 2000 using Ordinary least square (OLS) technique. Profitability, tangibility, tax, size, non debt tax shields, growth opportunities, volatility, ownership structure and managerial shareholdings were selected as determinants and three measures of leverage - long term debt ratio, total debt ratio and total liabilities ratio each divided by book value and market value of equity were employed in the study. It was observed that Chinese companies rely on higher levels of external financing mainly in the form of equity and have low long term debt ratio. Leverage in Chinese firms increases with firm size, non debt tax shields and fixed assets, and decreases with profitability and correlates with industries. Ownership structure also affects leverage. Leverage increases with volatility. Chinese listed companies follow static Trade-Off model rather than pecking order in Capital Structure.

Baral (2004)[41] examined the Determinants of Capital Structure – size, business risk, growth rate, earning rate, dividend payout, debt service capacity and degree of operating leverage in Nepalese context with reference to Capital Structure theories. He used eight variables multiple regression model to assess the influence of the above explanatory variables on Capital Structure. He found that corporate size, growth and earning rate are statistically significant Determinants of Capital Structure of Nepalese listed companies.

Boateng (2004)[42] conducted an interesting study on international joint ventures (JV) of Ghana to show that increasingly FDI is becoming an important source for developing countries capital flows as compared to other flows. He in his study examined how international joint ventures are financed and what are the factors influencing the Capital Structure of these joint ventures. The study was based on questionnaires to 'forty one' joint ventures and the results indicated that firm characteristics such as size of joint venture, type of industry, level of ownership of partners to the joint venture influence the Capital Structure of firms.

Frank & Goyal (2004)[43] examined the factors which are important for predicting leverage by using a sample of publicly traded US firms for the period from 1950 to 2000. Using Bayesian Information Criterion (BIC) to determine which factors are worth keeping, they selected seven factors from a long list of thirty-six factors influencing Capital Structure decisions. The seven important factors selected on the basis of market based definition of leverage were: median industry leverage, market to book ratio, collateral, profitability, dividend payout, size and expected inflation. The study considered five definitions of leverage- total debt to total assets, long term debt to total assets, total debt to market value of assets, long term debt to market value of assets and interest coverage ratio. Linear regressions are used to study the effect of factors. The study concludes that median industry leverage, expected inflation, size and collateral are positively related to leverage and market to book ratio, profitability and dividend payout are negatively related to leverage.

Drobetz & Fix (2003)[44] tested the predictions of Trade-Off and Pecking Order Theory on 124 non financial Swiss for a period from 1997 to 2001 using dynamic panel model. Following Rajan & Zingales (1995)[34], in this study four measures of leverage were employed - total liabilities to total assets, total debt to total assets, total debt to net assets and total debt/ total (debt + equity). Tangibility, firm size, growth opportunities, firm size, profitability, volatility, non-debt tax shields, uniqueness and industry classification were selected as variables effecting leverage. Using cross sectional regression analysis, pooled regressions and target adjustment model to study whether there is a target debt ratio, they conclude that (i) firms with more growth opportunities apply less leverage, (ii) more profitable firms use less leverage confirming the pecking order model but contradicting Trade-Off model, (iii) leverage is closely related to tangibility of assets and volatility of earnings and (iv) firms adjust to long term financial targets and tend to maintain target leverage ratios.

Song (2005)[45]investigated the Capital Structure determinants of Swedish firms based on a panel data set of 6,000 companies from 1992-2000. In his study he used three book value leverage measures - the ratio of total debt over capital, short-term debt to capital and long-term debt to capital. The Capital Structure determinants used in the study were – tangibility, non-debt tax shield, profitability, size, expected growth, uniqueness, income variability and time dummies. Panel data regression analysis (a fixed-effect panel data model) was applied to study the Determinants of Capital Structure. The author concluded that there exist significant differences in the determinants of the three leverage measures. All three forms of debt were significantly related to tangibility, profitability, size and income variability. Non-debt tax shield was only related to short term and long term debt. Uniqueness and growth are not related to any of the three debt measures. There also existed significant differences between short-term and long-term debt ratios in all three cases. While tangibility was positively related to long-term debt and total debt, it was negatively related to short-term debt. Non-debt tax shield had positive effect on short-term debt ratio whereas it was negatively correlated with long-term debt ratio. Size was positively related to both total debt and short-term debt ratio and negatively correlated with long-term debt ratio. The author concluded that most of the Determinants of Capital Structure as suggested by Capital Structure theories appear to be relevant for Swedish firms.

Gonenc (2005)[46] conducted a comparative study of debt financing between International and Domestic firms of Turkey, Germany & UK. The firms that had foreign sales to total net sales ratio greater than or equal to 10% were classified as international firms and domestic firms were classified as the ones that have a foreign sales ratio less than 10%. The main objective of the study was to compare debt ratios of international and domestic firms and to identify whether the effects of determinants on debt financing on these two groups is different. The study period Covered was 1995-1999 for Germany and UK, and 1995-2001 for Turkey. The variables selected as determinants were volatility (risk), profitability, size, tangible fixed assets, growth opportunities, tax debt shield, existence of controlling shareholders and industry classification. The leverage measure was total debt to total asset ratio. Multiple regressions, chow tests were used for analysis. The major findings were that Turkish international firms use higher total debts than domestic firms but no support or such evidence was found in case of German and U.K firms. Controlling shareholders applied better monitoring mechanism and reduced agency cost in Turkey whereas created agency problems in Germany. The firm specific factors like risk, profitability and fixed assets have greater adverse effects on debt financing of international firms than domestic firms. Existence of growth opportunities increases the debt ratios of international firms. Turkish international firms increase their debt financing at a fixed rate. The results did not explain higher level of debt financing of Turkish international firms in comparison to that of domestic firms.

Jong *et.al* (2005)[47] conducted a comparative analysis of the impact of firm specific factors and country specific factors on the Capital Structure of firms across 42 countries around the world including India. The period covered was five years from 1997 to 2001. Two measures of leverage to test firm specific variables were- long term debt to book value and long term debt to market value of total assets. Firm specific determinants of leverage were tax, tangibility, size, profit, risk, growth and liquidity. Country specific determinants of leverage were - Market/Bank based financial system, Creditor right protection, Shareholder right protection, Bond market development, Stock market development, Enforcement of law, Corruption, GDP growth, Trade openness, Capital formation, Interest rate, Inflation, Dividend imputation tax system and Dividend relief tax system.

With the help of Ordinary Least Square regressions, F test, Chow Test and Seemingly Unrelated Regression (SUR) estimation method, they concluded that the impact of firm specific factors like tangibility, firm size, risk, growth and profitability on cross-country Capital Structure is significant and consistent with conventional Capital Structure theories. Country specific factors do matter in determining and affecting the leverage choice around the world and they should be taken into account in the analysis of a country's Capital Structure.

Buferna *et.al* (2005)[48] provided evidence on Determinants of Capital Structure from Libya using a panel database of 55 companies (32 public companies & 23 private companies) over the study period of five years from 1995 to 1999. The sample includes both financially sound companies and companies in financial distress three measures of leverage - total debt, short term debt and long term debt, all scaled down by total assets were used in the study. To identify which of the Capital Structure theories is relevant in Libyan context, the impact of four explanatory variables - tangibility, size, profitability and growth opportunities on leverage was examined using cross sectional ordinary least square regression analysis. The results indicated that both static trade-off theory and agency cost theory were relevant theories to the Libyan companies' Capital Structure, but there was little evidence to support Information Asymmetry theory.

Akhtar (2005)[49] examined the significance of Capital Structure determinants of Australian multinational corporations (MC's) and domestic corporations (DC's) over the period of 1992 to 2001. 97 (DC's) and 122 (MC's) were selected as sample firms. The leverage measure was defined as the ratio of the book value of long term debt to book value of long term debt and market value of equity. The determinants selected for the purpose of the study were: agency costs of debt, bankruptcy costs, non-debt tax shields, profitability, size, collateral value of assets. They also studied the industry effect and examined the effect time variation on Capital Structure. Additional multinational corporate Capital Structure determinants like diversification, foreign exchange risk and political risk were studied and their impact on Capital Structure of firms was assessed.

Using Tobit regression model for analysis, it was found out that growth, profitability & size are significant determinants of leverage for both types of corporations. For DC's collateral value of assets was significant. Bankruptcy costs and profitability were significant in explaining multinational leverage relative to domestic leverage. Greater levels of diversification lowered the leverage. Foreign exchange risk and political risk of corporations did not explain leverage. The industry effect was not consistent across domestic and multinational corporations but when industry effects were considered, the significance of the original determinants remained constant and some industries became significant. While studying the time variation effect, it was found that leverage and the Determinants of Capital Structure, both varied across domestic and multinationals over the sample period.

Seetanah *et.al* (2007)[50] investigated the Determinants of Capital Structure of 38 companies listed on the stock exchange of the Small Island Developing State of Mauritius over the period from 1994 to 2004. The effect of profitability, size, tangibility, growth opportunities, business risk, tax shield effects and liquidity on leverage was captured using panel regressions. Two measures of leverage were used in the study - Total Liabilities ratio defined as (Total liabilities / Total liabilities + book value of equity) and long term Debt ratio which was defined as (Total liabilities-current liabilities / Total liabilities - Current liabilities + book value of equity). The results indicated that major Determinants of Capital Structure in Mauritius are profitability, size, tangibility and liquidity. Profitability and liquidity were negatively related, and growth positively related with leverage supporting the Pecking Order Theory. Size was also positively related to leverage supporting the Trade-Off theory. The authors concluded that Capital Structure theories could partially explain the financial structure of firms operating in Mauritius. Despite the differences that exist between developed countries like U.S and developing state like Mauritius, the study shows that insights from modern finance theory are also applicable to Mauritius as certain firm specific factors were relevant in explaining the Capital Structure of firms in Mauritius. The investigations at disaggregate industry level revealed that there was not much difference in Determinants of Capital Structure across industries.

Dragota & Semenescu (2008)[51] analyzed the Capital Structure of Romanian listed companies for the period 1997-2005. The aim of the study was to find if the information asymmetry influenced the Romanian capital market through the Capital Structure and whether the signaling theory or the Pecking Order Theory is able to explain the Capital Structure policies of Romanian firms better. Three measures of leverage were used: equity/total assets (the total leverage), financial debt /total assets and commercial debt/total assets. The determinants selected for the purpose of study were tangible assets, size, profitability and growth opportunities. Using regression analysis, they found out that profitability and tangibility were negatively related with leverage, size positively correlated to the financial debt, but negatively related to commercial debt, growth opportunities as measured by market to book ratio was negatively related to all measures of leverage. The study concluded that the Romanian capital market faced the information asymmetry problem and that Romanian listed companies sustained their assets in order of first equity, then commercial debt and finally financial debt. The Romanian listed companies structured their financing policy more according to the Pecking Order Theory principles rather than the one based on the signaling one.

Hecht & Haye (2009)[52] wanted to empirically examine whether the Determinants of Capital Structure for firms located in mature capitalist economies are also relevant to those located in China and India and whether pooling or panel models are able to capture the variation in firm-level leverage across time and location. They obtained firm-level data for American, Asian (Chinese, Indian, Japanese), and European (French, English, German) companies from Thomson Financial Worldscope database for a period from 2000 to 2007. They tested the impact of risk, investment opportunities, asset tangibility, size, product uniqueness, non-debt tax shields and profitability on the leverage ratio as measured by total debt to total assets. Control variables were included to capture both country and sector effects. They found that results were generally consistent across pooling and panel models and the results indicated that firm leverage was positively related with asset tangibility and size, negatively related with product uniqueness, and not generally related with either firm-level profitability or non-tax debt shields. They concluded that static trade-off hypothesis provides the most robust explanation of Capital Structure for firms located across global geographic regions.

2.3.2 Indian Studies

Bhat (1980)[53] conducted an important study on determinants of Financial Leverage. For the purpose of the study, 63 firms from engineering industry were selected and the study covered a period of six years (1973-1978). The relationship between firms financial leverage as measured by total debt to net worth, at book value and it's determinants - size, business risk, growth rate, profitability, dividend payout, debt service capacity, degree of operating leverage was examined with the help of multiple regression analysis. The major findings of the study were: a) Firms financial leverage is not related to size; b) Risky firms are more likely to employ low percentage of debt in their financial structure; c) Firm's growth rate is not associated with firms leverage; d) There is negative relationship between dividend payout and leverage ratio; e) Earnings rate is linked to leverage in direct manner; f) Degree of Operating leverage does not influence leverage, g) Financial leverage and Interest to EBIT ratio is negatively related.

Mittal & Singla (1992)[54] conducted an empirical study to demonstrate that several institutional characteristics like size, asset composition, debt service capacity, business risk and growth rate may be important determinants of Debt-Equity mix. Top 11 companies from Cement industry and 14 companies from Automobile industry were selected for the purpose of study and data was collected for five years from 1986 to 1990. Multiple regression technique was used to test the impact of independent variables on the Debt-Equity ratio. In Cement Industry the important explanatory variables were Size, Asset Composition, Business Risk and Growth Rate while in the case of Automobile industry, only Business Risk was found significant.

Singla & Mittal (1993)[55] conducted a survey on the Determinants of Capital Structure by presenting views of different authors on the subject in India and abroad. It was observed that there is no unanimity among researchers on the Determinants of Capital Structure. It was found out that asset composition, business risk, growth rate, earning rate, industry class, debt service capacity and corporate size are the most important Determinants of Capital Structure.

Deb (1995)[56] empirically investigated the Determinants of Capital Structure of 197 large mature corporations of India - 143 Domestic and 53foreign controlled corporations over the study period of 1982 to 1990 using the method of multiple regression analysis. The main objectives of the study were to find whether agency costs are significant Determinants of Capital Structure choice, to find out the reasons for the Capital Structure of Indian companies being more leveraged than foreign controlled companies and the validity of Pecking Order Theory in India context. The impact of profitability, growth, variability and non debt tax shields on net debt to asset ratio was assessed and it was found out that, the funding pattern was broadly found to agree with the pecking order hypothesis. The agency-theoretic explanation was not justified and could not explain the use of debt by Indian companies.

Singla & Mittal(1997)[57] analyzed the influence of Industry class and Ownership pattern on Corporate Capital Structure in India by applying parametric one way analysis of variance (ANOVA) and non-parametric Kruskal-Wallis test. The sample consisted of 209 Giant companies' of private corporate sector in India divided into fourteen different industries and the study period was five years from 1986 to 1990. The study confirmed statistically significant influence of industry class on debt-equity ratio. Debt-equity ratio significantly differed among the industries and was influenced by Industry class. The investigation also confirmed the expected impact of ownership pattern on corporate Capital Structure. Different owners, subject to their mutually conflicting interests, influenced the debt-equity ratio of the company.

Kantawala (1997)[58] made an important study on the Determinants of Capital Structure of 483 non-government non-financial public limited companies, divided into 20 industry groups. The period of study was three years from 1991 to 1993. The factors selected as determinants were asset structure, profitability and size. Simple linear regression and multiple regression technique were used to study the effect of Determinants of Capital Structure on the debt-equity ratio. It was observed that asset structure had positive and significant impact on the debt-equity ratio confirming the prediction of Trade-Off Theory. It was also observed that profitability had significant negative relationship with the debt-equity ratio which supported the Pecking Order Theory.

Kakani (1999)[59] made an empirical examination of the existing theories on the Determinants of Capital Structure with respect to 100 large sample firms of Indian private corporate sector public ltd companies. The period of the study was 1985-1995 divided into (1985-1989) - pre liberalization and (1992-1995) - post liberalization period respectively. The main objectives of the study were - (a) To analyze the debt structure; (b) To identify the factors affecting the corporate debt maturities and (c) To compare the Determinants of Capital Structure between pre and post liberalization periods. The observed determinants were collateral value of assets, capital intensity, non debt tax shields, growth, uniqueness, size, earnings volatility, net exports, regulation, corporate strategy and profitability. Three measures of financial leverage were used- long term and short term debt divided by book value of equity and total debt divided by total assets. Multiple regression technique was used and the results revealed that: a) Liberalization of Indian economy appeared to have affected the Determinants of Capital Structure and b) Profitability, Capital Intensity and Non Debt Tax Shields seemed to be important Determinants of Capital Structure of the firms.

Bhattacharyya & Banerjee(2001)[60] examined the explanatory powers of three broad categories of factors viz; Taxes, Contracting costs and Information costs in shaping corporate financial policy in Indian Scenario. The sample consisted of longitudinal data set of 147 companies representing eight different industries. Only manufacturing firms controlled by founding family members were chosen. The period of the study was eleven years from 1988-89 to 1998-99. The variables selected to represent the three broad factors were - Tax Factors: effective tax rate & non debt tax shields, Contracting Costs Factors: size, risk, growth and Information Costs factors: profit, non-fixed assets, accruals. Pooled Time Series Cross Sectional analysis (TSCS) was applied to examine the dynamic response of Capital Structure to the chosen explanatory variables and cross sectional regression was used to test the cross sectional effect on firm's debt policy. The study found that contracting costs and information cost factors affect corporate Capital Structure more than tax factors. Corporate tax had insignificant role to play in determining a firm's debt policy. It was found that firms with growth opportunities use less debt contrary to the suggestion of Pecking Order Theory. It was also observed that firms with liquid disposable assets use less debt confirming pecking order hypothesis. The study confirmed that the pecking order hypothesis and the optimum Capital Structure hypothesis are not mutually exclusive.

Manos & Green (2001)[61] examined the Capital Structure decisions with reference to business groups in India. His study was based on a sample of 1472 Indian firms, out of which, 912 were independent firms and 560 group affiliated. All data was sourced from CMIE Prowess. The study period was only one year, ending on March 2000. He observed that Group affiliation has strong effect on Capital Structure decisions, group profitability has negative effect, size & growth do not matter for group affiliated firms but are critical for Independent firms. Liquidity has positive impact on Group affiliated firms, while intangibility and profitability, group debt and group size have negative effect. No significant differences were found between group & non-group affiliated firms in terms of impact of age and stock illiquidity on Capital Structure decisions.

Garg & Shekhar (2002)[62] analyzed the debt structure of ten top companies coming from four industries over a period ranging from 1988 to 1998. The main objective of the study was to underline the effect of Determinants of Capital Structure–asset composition collateral value of assets, debt service capacity, earning rate, life, business risk and corporate size on the debt-equity ratio by using multiple regression technique. The results indicated that asset composition, collateral value of assets, life and size were the most important factors in determining the Capital Structure. Business risk was not found significant in deciding the leverage of the firm.

Bhaduri (2002)[63] made an important study on Capital Structure choice of Indian corporate sector. For the purpose of study a sample of 363 firms representing nine broad industries were selected and the data was drawn from CMIE database. The period of study was six years from 1989-90 to 1994-95. Exploratory factor analysis was used to analyze the impact of firm specific attributes – asset structure, non-debt tax shields, size, financial distress, growth, profitability, age, signaling and uniqueness on the Capital Structure of firm. To analyze various measures of debt depending on their maturity structure, three measures of leverage measured in book values – total borrowings, long term borrowings and short term borrowings to total asset ratio were used. The study shows that optimum Capital Structure choice of Indian firms is strongly influenced by factors such as size, growth, cash flow, uniqueness and industry characteristics.

Rao & Lukose (2002)[64] provided empirical evidence on the Determinants of Capital Structure of listed non-financial Indian firms based on a comparative analysis dividing the study into pre-liberalization (1990-1992) and post-liberalization (1997-1999) period respectively. 498 firms in pre-liberalization and 1411 firms in post-liberalization period represented their sample of study. Two measures of leverage –book leverage and market leverage were used in the study. The explanatory variables used in the study were based on various Capital Structure theories namely the tax based theory, the signaling theory and the agency theory. Non debt tax shields, tangibility, profitability, business risk, growth opportunities, growth and size were the explanatory variables used and to represent agency costs, dummy variables for big business group firms, foreign private firms, and other firms have been used was used to analyze the Determinants of Capital Structure, regression model was adopted and it was observed that profitability, tangibility, taxes and growth were significant factors. Size and business risks were significant factors during post liberalization period. Tax and signaling effect play important role in financing decisions, agency costs effect financing decisions of big business houses and foreign firms.

Bhole & Mahakud (2004)[65] analyzed the trends of Capital Structure of public limited and private limited companies in India during the period 1966-2000 and empirically examined the Determinants of Capital Structure of 330 public limited companies using a panel data model, dividing the study into three periods -1984 to 2000, 1984 to 1992 and 1992 to 2000 respectively. The determinants selected for the study were: cost of borrowing, cost of equity, size, profitability, growth rate, collateral value of assets, liquidity and non-debt tax shields. It was observed that there was significant increase in the corporate leverage with passage of time. Dependence on debt was more in case of public limited companies than private limited companies. Cost of borrowing, cost of equity, size, collateral value of assets, liquidity and non-debt tax shields were found to be significant factors affecting the Capital Structure decision of firms in India.

Gupta(2004)[66] examined the pattern of asset financing by Indian companies and the influence of factors such as tangibility, volatility, profitability, size, growth, non-debt tax shields and flexibility on the Capital Structure decision of a sample of 210 Public Ltd companies representing the seventeen industrial sectors in India. The period of the study was from 1992 to 2000. Two measures of leverage- long term debt to net worth and total liabilities to net worth were used for the purpose of analysis. Using multiple regression analysis, they found that determinants were industry specific, Indian firms prefer to finance fixed assets with debt sources compared to equity, proportion of debt financing goes down when total assets increase. Size was not found to be significant, volatility of earnings was directly related to leverage. Small firms rely more on debt than large firms as large firms have better access to equity sources. Profitability was negatively related, non debt tax shields and flexibility positively related to debt ratios. He suggested that financial managers in India must factor and carefully analyze sector specific attributes before attempting to achieve their optimal Capital Structure.

Das & Roy (2005)[67] analyzed the inter-industry variation in Capital Structure of Indian firms. The time period of the study was twenty years divided into pre-liberalization (1979-1990) and post liberalization (1992-1999) respectively. Their sample consisted of firms from twelve Indian manufacturing industries and they used an unbalanced panel of firms and hence the total number of firms varied with time. The technique used was cross sectional one way analysis of variance. They tried to analyze whether differences in Capital Structure of firms across industries arise due to difference in age of firms. They also investigated the size class effect and tried to find out whether the nature of industry plays any role in the variations of Capital Structures among industries. They concluded that both firm size and industry classification contribute to variation in Capital Structure, the differences in the fund requirement of groups based on the technology used is a potential source of existing variation.

Guha & Kar (2006)[68] conducted a firm level panel study for India on 450 listed Indian firms for a period of twelve years from 1992 to 2004. The factors selected as Determinants of Capital Structure were growth rate, age, share price, asset structure, size, industry classification and long term borrowing. Two measures of leverage - Sum of fixed deposits, commercial papers and debentures and Total debt to Total assets were used in the study. Using panel data regression analysis, the author concluded that both the measures of leverage depend on firm's long term borrowing and sales performances.

Majumdar (2009)[69] empirically examined the determinants of long term borrowing for group affiliated Indian firms using a sample of 115 firms belonging to the largest 50 business houses in India from the period 1999 to 2006. They wanted to find out whether the borrowing behavior of group affiliated firms with a group's internal market, deviate significantly from what is prescribed by economic theory. Panel data regression model was used to examine the effect of tangibility, profitability, size, growth opportunities, uniqueness, non-debt tax shield and age on long term borrowings of group affiliated firms in India. Their findings in context of firm size, growth, uniqueness and non-debt tax shield supported their belief that group affiliation may result in change in borrowing behavior of firms having access to internal capital markets. However, the findings for age, tangibility and profitability indicated that the relationship between these factors and borrowings as hypothesized by theory was not different from that of non-group affiliated firms.

SECTION III

2.4 Survey of General Capital Structure Studies

2.4.1 Indian Studies

Batra (1981)[70] made an attempt to study the trends in debt-equity ratio of eleven industries for a period from 1970-1978 which was divided into two study periods: 1970-1974 and 1974-1978. It was found out that the overall debt-equity ratio for all industries taken together was well below 1:1 for both the time periods. The reasons for low debt-equity were-companies meeting their long term financing requirements through short term bank borrowings and then getting it rolled over for number of years, encouraging response for public issues, inclusion of convertibility clause in loan agreements and inordinate delay in disposal of loan applications by financial institutions. The author concluded that there was much scope for the companies to increase the volume of debt in their financial structure

Mukherjee (1983)[71] wanted to test whether the debt-equity norm of 2:1 realistic in Indian context and whether it varies in different industry groups. It was found out that debt-equity ratios varied widely among companies and industries and the ratio was low in relation to the standard laid down. He felt that an arbitrarily imposed common standard is neither feasible nor practicable and that the quantum of leverage should depend on company's profitability aspects and potential cash flows. He believed that there should be a risk-return Trade-Off in financing pattern of a corporate body.

Pandey I. M. (1985)[72] conducted an in-depth examination of the industrial pattern, trend and volatilities of leverage and impact of size, profitability and growth on leverage on 743companies from 18 industrial groups over an eight year period from 1973 to 1980. For studying industrial patterns, all companies were classified by industry, size, profitability and growth. It was observed that high level of debt was employed by Indian industries. The study concluded that the level of leverage was moving upwards and leverage decisions of firms seemed to be independent of their size, profitability, growth and industry variations.

Here we can observe contrasting results. Batra (1981)[70] & Mukherjee (1983)[71] had observed that the debt levels were low whereas Pandey I.M (1985)[72] observed that debt levels were high. The definition of debt explains the difference. Both Batra (1981)[70] & Mukherjee (1983)[71] had defined debt as debentures plus other long term borrowings and had excluded short term borrowings including current liabilities. Pandey I.M (1985)[72] had analyzed total liabilities to total assets ratio in detail. He had included short term borrowings and current liabilities in his definition of debt as he believed that all forms of debt including sundry creditors provide gearing with different speeds and also involve risk of nonpayment and consequently bankruptcy. He also stated that if various sources of debt are substitutes for each other, then it is proper to analyze total liabilities to total assets ratio as a leverage measure.

Jain (1990)[73] examined the debt practices followed by top 200 companies of Indian private corporate sector for the period from 1977 to 1986. His findings also validated the findings of Batra(1981)[70] as it was found out that the sample companies had a marked preference for current liabilities (including short term borrowings) to the long term borrowings as a means of financing their assets. The reason for not resorting to long term debt by Indian corporate sector was mainly due to severe restrictive covenants imposed by financial institutions while granting loans. He recommended the need of incorporating short term borrowings from bank in the definition of debt to make the concept of debt-equity ratio serve the intended purpose.

Mallik (1994)[74] through a case study of Dunlop India Ltd over a period of 1986 to 1990 tried to study the impact of leverage on return on equity and financial margin of safety. They inferred from the study that financial leverage and earnings per share were negatively related and the company seemed to have faulty financial policy as the rate of return on equity capital declined more than the rate of return on total assets.

Jain *et.al* (1995)[75] undertook a questionnaire based survey of 64 public limited companies listed on Bombay stock exchange to study their Capital Structure practices. They observed that firms showed a marked preference for debt to equity in designing their Capital Structure and the sample firms preferred raising funds from financial institutions than to approach capital market. The Capital Structure decisions of private corporate sector in India were by and large consistent with the theory of financial management.

Paul & Ghosh (1996)[76] tested the effect of change in Capital Structure on profitability. Their study related to a 15 year period from 1976 to 1990. The sample consisted of 10 large private sector companies. Their results did not substantiate the belief that there is a positive association between debt-equity ratio and profitability. They felt that apart from the debt-equity ratio, other factors like age, growth rate, past track records, risk perception have a greater say on profitability of a company.

Babu & Jain (1998)[77] undertook a survey among finance managers of 91 private sector companies to determine their preference for debt or equity and the reasons for their preferences. They found out that, corporate firms in India, while designing their Capital Structure showed almost equal preference for debt and equity although equity had a marginal preference over debt.

Babu & Jain (1999)[78] examined the debt practices followed by the private corporate enterprises in India using a sample of 527 listed firms during 1980 to 1994. The main objective of the study was to examine the composition of short term and long term debt – practices followed by the private corporate sector. The ratios- short term debt to total assets, long term debt to total assets, short term debt to long term debt, debt service and interest coverage ratios were used to indicate the direction of changes in composition of debt and to measure firms debt service capacity. The main finding of the study was that there was a shift in preference for long term debt to short term debt during the study period.

Misra & Sahu (2000)[79] attempted to study the most preferred level of debt-equity mix adopted by firms in Indian industry to maximize their value, for a period from 1992 to 1999. It was observed that Indian firms believed that lower levels of debt would help them to achieve the wealth maximization objective and hence kept their debt levels low.

Patra (2000)[80] with the help of a case study on Tata Iron and Steel Company Ltd tried to examine the impact of debt financing on weighted average cost of capital and earnings per share. Relevant data for a period of nine years from 1984 to 1992 was collected. Their results indicated that the relationship between debt-equity ratio and weighted average cost of capital and earnings per share did not follow any accepted norm.

Suprita (2002)[81] critically surveyed the literature on corporate financing policy, Capital Structure and firm ownership. The study was divided into two parts. The first part dealt with theoretical and conceptual issues and second part dealt with survey of empirical research and findings. The first part discussed about agency theory and

Capital Structure, about conflicts between equity holders and managers and conflicts between equity holders and debt holders. The theories of asymmetric information, the interactions of investment and Capital Structure, the pecking order hypothesis, signaling with proportion of debt, models based on marginal risk aversion and theories of the impact of taxation on Capital Structure were also discussed in detail.

The main conclusion derived was that only a limited number of studies had examined the financial behavior of firms within developing economies and capital markets. The applicability of theories formulated for firms in developed capital markets to those in developing countries was questioned. The need for empirical research on corporate Capital Structure in developing countries was felt.

Green *et.al* (2002)[82] studied the financial structures of Indian companies using a sample of 1022 companies - (793 quoted companies & 229 unquoted companies), covering a period of 11 years from 1989 to 1999. They found out that, unquoted companies were more dependent on equity and on internal funds than quoted companies. Business groups did not appear to have close financial relationships among one another however unquoted companies experienced significant rise in their intergroup assets which the authors thought might be associated with issues related to insider control.

Veni & Narayana (2002)[83] studied the leverage, Capital Structure and dividend policies and practices of Coromandel fertilizers Ltd. an Indo-American joint venture for period 1995 to 2001 and found out that the company had a stable debt-equity ratio, was maintaining an increasing trend in its dividend payment. The Capital Structure and dividend decisions influenced the market price of the share to some extent.

Inessa L & Maria S (2005)[84] investigated financing patterns of 5,781 Indian firms over the period 1994-2003.. The study explored the potential differences across firms by sector, age, ownership, export orientation and size and investigated differences in the mean and median financing ratios across firm types using univariate t-tests. They examined the trends of debt (total borrowings) to assets, total liabilities to assets, payables to assets and long term debt to assets. They also examined the interest coverage ratios. Regression analysis was also used to study the effect of determinants of debt ratios- asset tangibility, return on assets, growth opportunities, business risk, tax rate and age of firm. They observed that debt to asset ratios had been relatively stable, interest coverage ratio showed a 'U' shaped pattern falling during 1997-99 and recovering afterwards. Young firms had lower debt ratios than older firms. Foreign firms had less debt than both private and government owned firms. Manufacturing firms had higher debt ratios than service firms. Small firms had significantly lower debt to asset ratios and lower growth rates of debt in comparison to large firms. The most robust finding was that debt levels increased with firm size. The findings provided evidence of stronger credit constraints for smaller firms.

2.4.2 Studies Abroad

Agrawal & Nagarajan (1990)[85] provided evidence on factors influencing the Capital Structure decision of 100 corporations listed on U.S stock exchanges, which were all equity firms. They compared their financial, managerial and ownership characteristics with a sample of levered firms. They found out that managers of all equity firms had significantly large stockholdings than managers of similar sized levered firms in their industry. They also found out that there was significantly greater family involvement in the corporate operations of all equity firms than in leveraged firms. The managerial ownership in all equity firms was positively related to the extent of family involvement and these firms were characterized by higher liquidity positions than levered firms.

Barclay & Smith (1995)[86] examined the determinants of corporate debt maturity. They examined three sets of hypothesis- contracting-cost hypothesis, signaling hypothesis and tax hypothesis which had been proposed to explain corporate debt maturity. To measure the maturity structure of a firm's debt, they examined the percentage of the firm's total debt that has a maturity of more than three years. The determinants of corporate debt maturity selected for the purpose of study were – investment opportunity set, regulation, firm size, firm quality and term structure. Their study offers support for contacting cost hypothesis. They find that firms with more growth options issue more short term debt. Regulated firms issue more long term debt. They also find that large firms issue high proportion of long term debt. They found little evidence to the hypothesis that firms use maturity structure of their debt to signal information to the market. They also did not find that taxes affect debt maturity.

Anderson (2002)[87] explored the relationships among the firm's financial structure, its choice of liquid asset holdings, and growth. The determinants of liquid asset holdings were empirically examined using panel data sets of Belgian and UK firms. The effect of growth opportunities, cash flow, short term, medium term and long term debt, market value to book value on firm's liquid assets (the total liquid asset holding of the firm expressed as a fraction of total assets) was examined with the help of regression analysis. Strong and positive relationship between the presence of growth opportunities and corporate liquidity was found. Cash flow volatility was positively associated with liquid asset holding but there did not appear any robust relationship between cash flow and corporate liquidity. The study also found evidence of a positive relationship between leverage and liquid asset holding. They thus confirmed their theoretical model which predicted that precautionary motive for corporate liquidity means that higher leverage will tend to be associated with higher average levels of liquid assets.

Bahng (2002)[88] selected the Capital Structure of major OECD countries during the period of 1975 to 1994 to investigate whether international Capital Structures converged. The ten countries selected for the purpose of study were – Austria, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway and the U.S. They used four leverage measures - (total debt - stockholders equity) to stockholders equity, total debt to total assets, fixed debt to total assets and total debt to stockholders equity. They used the concept of Beta convergence and Sigma convergence for the purpose of the study. Depending on the samples and the definition of debt ratios, they found out that conflicting results were obtained for Beta and Sigma convergences. Irrespective of debt ratio definition, the Capital Structure of Japan had converged towards the global mean. They felt that acceptance of Beta and Sigma convergence hypothesis depended on the sample type and the definition of Capital Structure.

Mayer & Sussman (2003)[89] followed a different procedure to test Capital Structure theories. They used a filtering technique to identify firms that displayed investment spikes. The authors explained investment spikes as distinct sharp one-off increases in investment. The examined the financing of firms around and during spikes to find out whether there was a relation between financing pattern before, after and during the spike and the characteristics of a firm. The results showed that firms raised large amounts in response to investment spikes and these expenditures were not financed out of accumulated reserves. Debt was a dominant source of finance especially for large firms; small companies depended on new equity sources. They observed that around the time of investment spikes both Pecking Order and Trade-off Theories played an important role in firms' financing decisions. They concluded that the Pecking Order provided a good description of short-run dynamics and the Trade-off Theory of longer run convergence.

Chkir & Cosset (2003)[90] examined the impact of foreign acquisitions on the Capital Structure of U.S. corporations. They wanted to investigate the relationship between debt ratios and the degree of international diversification. They used a sample of eighty-five foreign subsidiary acquisitions by U.S. corporations between 1990 and 1994. Univariate analysis was used to compare the leverage before and after the acquisition, and multivariate analysis was used to investigate determinants of the post-acquisition debt financing. They examined that long-term debt ratio of corporations that acquire foreign subsidiaries showed a drop in the ratio in the acquisition year compared to the preceding three years and then leverage increased from the first year until the third year following the acquisition. Multivariate analysis results suggested that apart from size and profitability, debt financing could also be explained by a geographical and industrial diversification effect and that exchange risk and political risk also affected the debt financing decision.

Johnson (2003)[91] wanted to test whether short term debt maturity attenuate the negative effect of growth opportunities on leverage. To analyze how debt maturity affects the relation between leverage and growth opportunities, they used two simultaneous equations that recognized that maturity is determined endogenously with leverage. They could find support for the prediction that using shorter term debt attenuates the negative effect of growth opportunities on leverage but it also at the same time increases liquidity risk which negatively affects leverage. The firms Trade-Off the cost of underinvestment problems against the cost of increased liquidity risk when choosing short term maturity. They also felt that their results could explain why a negative empirical relationship between leverage and growth opportunities is observed.

Faulkender & Petersen (2003)[92] examined how firms choose their Capital Structure. They believed that while estimating a firm's leverage, it is important to include not only the determinants of its desired leverage but also variables which measure the restrictions on a firm's ability to increase its leverage. They felt that firms may be rationed by lenders which may lead to some firms being under levered in comparison to unconstrained firms. They examined the leverage of firms as a function of capital market access. It was found out that Capital Structure decisions of large firms were constrained by capital markets.

The firms had different leverage ratios based on whether they had access to public bond markets as measured by the firm having a debt rating. The firms that could raise debt from public markets had more debt.

2.5 Conclusion

- The Capital Structure theories discussed in Section I (subsection section 2.1 and 2.2) help to recognize the theoretical problems involved in comprehending the relationship of a firm's Capital Structure with various aspects like Agency Costs, Asymmetric Information, Signalling, Dividend Payout, Profitability, Growth of a firm, Tangibility of Assets, Liquidity, Age of a firm, Size of a firm, Investments of a firm, Free Cash Flows, Corporate Control, Maturing Long Term Debt, Market Power, Product or Input Market , Optimal leverage range (Target leverage ratio) and so on. The aim of any firm would be to achieve their Optimal Capital Structure, and they may strive to attain it, keeping all these issues in mind. The Trade-off Theory and the Pecking Order Theory emerge as the most widely debated and conflicting theories of Capital Structure. The debate still continues regarding which Capital Structure theory aptly describes the financing behaviour of firms.

- The review of literature of studies on Determinants of Capital Structure conducted in India and abroad done in Section 2.3 reveal that there are various factors influencing the Capital Structure decision of firm. The most widely studied Determinants of Capital Structure policy appeared to be Size, Profitability, Growth Rate, Collateral Value of Assets, Earnings Volatility, Non Debt Tax Shields, Industry Classification, Age, Dividend Payout and Liquidity. There are many other factors which also have been identified by previous researchers and have been discussed in detail in Chapter-3. The review of literature done in Section 2.4 on General Capital Structure studies conducted in India and abroad highlight the fact that Capital Structure decision has got many dimensions and many parameters which will have to be kept in mind by the firms while designing their Capital Structure

- It is observed that that many factors had been studied by previous researchers as Determinants of Capital Structure. Which of the factors most appropriately help in designing the Capital Structure is still a question. In this study, an attempt has been made to study almost all the major Determinants of Capital Structure. There can be several theoretical combinations of the Determinants of Capital Structure and which combination is best in Indian context and in particular for Foreign Direct Investment Companies will be the main research objective of this study.

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CHAPTER - 3

RESEARCH DESIGN

CHAPTER CONTENTS

CHAPTER - 3

RESEARCH DESIGN

This chapter discusses the details of the research methodology followed in the study to analyze the impact of potential Determinants of Capital Structure on Capital Structure practices of FDI Companies in India (company wise and industry wise) and to study the trends in Capital Structure practices of FDI Companies in India. The hypotheses to be tested are stated in this chapter. The procedure followed for sample selection along with the period of study, the statistical tools and techniques adopted for the analysis are discussed in detail. The measures of Capital Structure employed in the study have been discussed and defined. The chapter provides a theoretical background of the various Determinants that influence the Capital Structure decision of a firm. The Determinants selected for the purpose of studying their impact on Capital Structure of FDI Companies in India have been listed and the indicators for the Determinants employed in the study have been defined. The chapter also lists the Determinants of Capital Structure which are not selected for the study.

3.1 Introduction

The importance of financing decision of private corporate sector of India cannot be overemphasized. The financing decision of corporate companies has implications not only on the health of their own business thereby affecting the value of the company but also, for the entire economy both in terms of economic growth and employment.

Efforts are being made by the Indian government to attract large FDI flows in India and one of the ways is encouraging foreign private equity participation in Indian companies. The companies having Foreign Direct Investment will be referred to as FDI Companies in India in this study and the exact definition of FDI Companies has been mentioned in Section 3.3 in this chapter. Throughout this study, the terms 'company' and 'firm' have been used interchangeably. Considering their importance in the Indian economy particularly in the changed globalised environment, an attempt has been made in this study to examine the financing practices of such companies which will provide considerable insight into the preferred choice of their financing mix. The study attempts to focus on Determinants of Capital Structure of FDI Companies in India and aims to analyze the impact of various Determinants on the Capital Structure of the selected group of companies with Foreign Direct Investment. On the basis of available literature and existing theories of Capital Structure and keeping in view the results of related research studies, (Refer Section 3.5.2), a list of relevant determinants is prepared. An attempt is made in the first step to analyze the impact of independent variables in general on Capital Structure of selected group of companies. In the second phase, an attempt is made to examine the difference, if any in the Determinants of Capital Structure grouping the companies into major industry groups.

3.2 Hypotheses

The objectives of the present study have been stated in Chapter-1, Section-1.4. Keeping in view the objectives of the study, the study aims to test the following null hypotheses:

To study the time trends in capital structure of FDI Companies in India:

H_{01} : No significant linear trend is observed in Debt Ratios of FDI Companies over a period of time. The Debt Ratios of FDI Companies do not change with passage of time.

To study industry-wise time trends in capital structure of FDI Companies in India:

H_{02} : No significant linear trend is observed in industry-wise Debt Ratios of FDI Companies over a period of time. The industry-wise Debt Ratios of FDI Companies do not change with passage of time.

To study the impact of the independent variables (Determinants of Capital Structure) on the Capital Structure of FDI Companies in India:

H_{03} : There is no significant impact of the Size of a company on its Debt Ratios.

H_{04} : There is no significant impact of the Profitability of a company on its Debt Ratios.

H_{05} : There is no significant impact of the Collateral value of assets of a company on its Debt Ratios

H_{06} : There is no significant impact of the Business Risk (Volatility) of company's earnings on its Debt Ratios.

H_{07} : There is no significant impact of the Growth Rate of a company on its Debt Ratios.

H_{08} : There is no significant impact of existence of Non- Debt Tax Shields of a company on its Debt Ratios.

H_{09} : There is no significant impact of the Debt Service Capacity of a company on its Debt Ratios.

H_{10} : There is no significant impact of Age of a company on its Debt Ratios.

H_{11} : There is no significant impact of Dividend Payout of a company on its Debt Ratios.

H_{12} : There is no significant impact of Liquidity of a company on its Debt Ratios.

H_{13} : There is no significant impact of Net Exports of a company on its Debt Ratios.

H_{14} : There is no significant impact of Cost of Borrowing of a company on its Debt Ratios.

H_{15} : There is no significant impact of Cost of Equity of a company on its Debt Ratios.

H_{16} : There is no significant impact of Uniqueness of a company on its Debt Ratios.

To identify the industry-wise Determinants of Capital Structure of Foreign Direct Investment Companies in India

H_{17} : There is no significant impact of the Determinants of Capital Structure- Size, Profitability, Collateral Value, Volatility, Growth, Non-Debt Tax Shields, Debt-Service Capacity, Age, Dividend Payout, Liquidity, Net Exports, Cost of Borrowings, Cost of Equity and Uniqueness on Debt Ratios of FDI Companies affiliated to a particular industry group.

3.3. Data Source and Sample

3.3.1 Meaning of FDI Companies: The present study relates to, "Determinants of Capital Structure - A Study of FDI Companies in India". As per the Balance of Payments Manual[1], "Direct investment enterprise is an incorporated or unincorporated enterprise in which a direct investor, who is resident in another economy, owns 10 per cent or more of the ordinary shares or voting power (for an incorporate enterprise) or the equivalent (for an unincorporated enterprise)". This definition is used as the base for sample selection criterion in this study.

"FDI is defined as a cross-border investment in which a resident in one economy (the direct investor) acquires a lasting interest in an enterprise in another economy (the direct investment enterprise). The lasting interest implies a long-term relationship between the direct investor and the direct investment enterprise and usually gives the direct investor an effective voice, or the potential for an effective voice, in the management of the direct investment enterprise. By convention, a direct investment is established when the direct investor has acquired 10 percent or more of the ordinary shares or voting power of an enterprise abroad. FDI does not comprise a "10 percent ownership" (or more) by a group of "unrelated" investors domiciled in the same foreign country - it must be one investor or a "related group" of investors", Report of CMCG group (2003)[2].

3.3.2 Data Collection: Using the above definitions of a 'Direct Investment Enterprise' as the base for sample selection, the data for the research is obtained from PROWESS Database maintained by Center for Monitoring Indian Economy (CMIE) (updated up to 26th June, 2007). The database gets updated on regular basis and hence the total number of companies keeps on changing. Similarly the number of listed companies also keeps on changing as and when the database is updated.

1. **First step:** Table 3.1 shows the sample selection procedure. Out of the total 9918 (the number keeps on being updated /changed) companies representing various industries existing as on 26th June, 2007, the number of listed companies (listed on various stock exchanges in India) as on 26th June, 2007 was found out to be 6114. Prowess gives information about listing as on the current date. There is no provision whereby one can find out how many companies have been listed as on eg. 31/03/2006. So first a list of listed companies existing as on 26th June, 2007 is obtained (6114 companies).

2. **Second Step:** Out of these 6114 companies listed companies, those having 10% *or more of Foreign promoter's share in equity holding existing as on 31/03/2007* were selected (375 companies). These 375 companies represent FDI Companies.

3. **Third Step:** Out of these 375 companies, only those companies having audited financial information available throughout the period starting from - 31st March, 1991 to 31st March, 2006 (16 years) were selected. Thus, there were 153 Foreign Direct Investment companies in India as sample.

Table 3.1 Sample Selection*					
Sr. No	Industry	Total Companies existing as on 26th June, 2007	Listed companies as on 26th June,2007	FDI companies existing as on 31st March ,2007	Companies having data from 1990-91 to 2005-06
1	Food	774	472	21	14
2	Textiles	758	549	18	3
3	Chemicals	1282	885	83	39
4	Non- metallic minerals	320	224	14	5
5	Metal & Metal Products	602	389	28	7
6	Machinery	720	461	67	40
7	Transport	285	154	29	21
8	Miscellaneous Manufacturing	373	215	12	5
9	Diversified	59	46	1	Nil
10	Mining	89	42	5	2
11	Electricity	100	20	Nil	Nil
12	Services	4221	2490	90	15
13	Irrigation	2	1	Nil	Nil
14	Construction	333	166	7	2
	Total	**9918**	**6114**	**375**	**153**
*Prowess (CMIE Database Updated up to 26th June, 2007)					

- Some companies have accounting period of more or less than 12 months. Comparison between such companies with different accounting period is not possible. Hence to serve the purpose of accounting comparison, the data for companies which do not have a normal 12 months accounting period have been annualized to bring these companies on even platform with other companies.

- Annualization is only for items of profit and loss account. Balance sheet items are as on a particular date and hence not annualized. Whereas profit and loss account represents profit and loss for a particular period and hence items are annualized.

- The data are adjusted for those companies, which change their financial year. Such changes result in one year with missing data and the subsequent year data of more than 12 months. Following Pandey I.M (2001, page5)[3], first the subsequent year data is annualized, and then the missing data is substituted by mean value.

- For screening purpose for the selection of sample, the date selected was 26th June 2007. However, later, the data was updated to include the years 2006-2007 and

2007-2008 for the sample of 153 companies. This resulted in a sample of 153 companies having data for the period from 31st March, 1991 to 31st March, 2008 (18 years).

- **For detecting outliers** – In this study, for analysis purpose, average ratios for the entire period from 1992 to 2008 have been taken. Companies reporting zero sales value for some years were excluded. Some companies reported negative Net Worth. If, the average debt ratio for a particular company was negative due to negative Net Worth in some years, such company was excluded from the sample. I N G Vyasya Bank Ltd was excluded, as it was the only bank in the entire sample. Apeejay Tea Ltd. was excluded as it was delisted in 2007.

- After removing all outliers, **the final sample was a set of 140 Listed Foreign Direct Investment companies** representing 11 industries having audited financial information available throughout the study period of eighteen years starting from 1990-91 to 2007-2008.

- Table 3.2 shows the industry-wise classification of the selected sample of 140 FDI Companies.

Table 3.2

The Final Sample Set of 140 FDI Companies in India Representing 11 Industries

Sr. No	Industry Classification:	No. of Companies
1	Food	11
2	Chemicals	37
3	Machinery	38
4	Transport	18
5	Services	14
6	Metal & Metal products	6
7	Non metallic minerals	5
8	Miscellaneous Manufacturing	5
9	Textiles	3
10	Construction	2
11	Mining	1
	Total	**140**

3.4 Methodology Adopted

On the basis of available literature and existing theories of Capital Structure and keeping in view the results of related research studies, a list of relevant Determinants of Capital Structure is prepared. Based on the findings of literature review, the study aims to analyze the impact of various Determinants on the Capital Structure of the selected group of sample companies (Final sample of 140 companies) with FDI.

3.4.1 Methodology Followed for Analyzing the Trends in Capital Structure of FDI Companies in India

1. **Trends in Debt Ratios**: To analyze the trends and direction of changes in the Capital Structure practices of 140 FDI Companies in India, various Debt Ratios (as mentioned in Section 3.5.1), along with their mean, median, standard deviation and coefficient of variation are calculated over the period of the study. The year wise mean Debt Ratios for the total sample of 140 companies and for each industry for entire study period (1991-2008) have been calculated. Along with tabular presentation of various Debt Ratios, diagrams and graphs have been used for obtaining a visual impression of trends in Debt Ratios over the sample period. Bar diagrams have been used to show the mean Debt Ratios of the sample companies. Bar diagrams have also been used for representing the financing mix adopted by the overall sample of 140 FDI Companies as well as to represent industry-wise financing mix. Line graphs have been used to indicate the trends in various Debt Ratios over time. The trends in Debt Ratios of all the industries except Mining industry are observed as Mining industry has only one company in its sample.

2. **Time Trends in Debt Ratios:** To study the time trends in Capital Structure of FDI Companies, the 'Method of Least Squares' is applied. The 'Method of Least Squares' may be used for fitting a 'Linear Trend Model' or a 'Quadratic Trend Model'.

   To examine whether Debt Ratios of FDI Companies in India exhibit a significant linear trend, the linear trend model (The simple linear regression equation) is used. Here, in linear regression analysis, regressions of the selected Debt Ratios as dependent variables and time in years as independent variables are conducted. The time period is 18 years (1990-91 to 2007-08). Time Dummies are used to denote the independent variable – (time in years) from the year 1991 to 2008. The straight line trend if any in the Debt Ratios is represented by the equation:-

$Y = a + \beta_1 X + e$

Where,

Y = The value of the Dependent variable (Y), what is being predicted or explained

a = Constant term of the model

β_1 = Beta, the coefficient of X, the slope of the regression line

X is the value of the Independent variable (X), what is predicting or explaining the value of Y

e = e is the error term; the error in predicting the value of Y, given the value of X

Here, in time series analysis, 'Y' represents the trend value of the debt ratio, 'X' variable represents time in years. β_1 represents the slope of the trend line, 'a' is the computed trend figure of the Y variable when X =0.

3. **Autocorrelation Problem**: A problem encountered in regression analysis using time series data is autocorrelation of the residuals. "When data are collected over sequential periods of time, residual at any point in time may tend to be similar to residuals at adjacent points in time. Such a pattern in residuals is called autocorrelation. When substantial auto correlation is present in a set of data, the validity of a regression model can be in serious doubt", Levine *et.al* (2003, pg.442)[4]. To rule out autocorrelation problem, **the Durbin-Watson (D) statistic**, a traditional test for detecting the presence of autocorrelation is used in this study. "The limits of 'D' are 0 and 4. These are the bounds of 'D'; any estimated 'D' value must lie within these limits. If there is no serial correlation (of the first-order), 'D' is expected to be about 2. Therefore, as a rule of thumb, if 'D' is found to be 2 in an application, one may assume that there is no first – order auto correlation, either positive or negative. The closer 'D' is to 0, the greater the evidence of positive serial correlation", Gujarati D (2003, page 468-469)[5].
   'd_L' represents the lower critical value of 'D'. 'd_U' represents the upper critical value of 'D'. "If 'D' is between 'd_L' and 'd_U', you are unable to arrive at a definite conclusion, Levine *et.al* (2003, pg.445)[4] .

4. **Quadratic Trend Model:** The results of 'Linear Trend Model' along with 'd' statistics for each debt ratio are observed. However, in some Debt Ratios, the problem of first order autocorrelation is detected, which can be due to specification bias in the model, that is, the ratio actually follows the non-linear trend rather than linear trend. To take care of this, the following 'Quadratic Trend Model' is also fitted.

   $Y = a + ß_1X + ß_2X^2 + e$

   Where,

   Y = The value of the Dependent variable (Y), what is being predicted or explained

   a = Constant term of the model

   $ß_1$ = estimated linear effect on Y (slope of the curve at origin)

   $ß_2$ = estimated quadratic effect on Y (the rate of change in slope)

   X is the value of the Independent variable (X), what is predicting or explaining the value of Y

   e = e is the error term; the error in predicting the value of Y, given the value of X

   Both 'Linear Trend Model' and Quadratic Trend Model' are applied to find whether there is a linear trend or curvilinear trend observed in the Debt Ratios over the period of study. The results of both 'Linear Trend Model' as well as, Quadratic Trend Model' are interpreted jointly. The trends in Debt Ratios are observed for the Debt Ratios of overall sample of 140 FDI Companies together. Industry-wise trends in Debt Ratios are also observed. Five major industries are selected for observing time trends- Food Industry, Chemical Industry, Machinery Industry, Transport Industry and Services industry.

3.4.2 Specification of the Model for Company Level Study to Examine the Determinants of Capital Structure:

1. ***First Stage of Analysis*- Simple Linear Regressions:** To examine the impact of various determinants (independent variables) on capital structure of a company, in the first stage of analysis, simple linear regression between each indicator of an independent variable, one at a time, with each measure of leverage (dependent variable) is conducted. This gives indications which of the indicators of independent variables are significant and are able to predict the values of dependent variable.

The simple linear regression equation used to estimate the impact of each of the indicators of explanatory variables on the dependent variable (Debt Ratio) is:

$Y = a + \beta_1 X + e$

Where,

Y = The value of the Dependent variable (Y), what is being predicted or explained

a = Constant term of the model

β_1 = Beta, the coefficient of X, the slope of the regression line

X is the value of the Independent variable (X), what is predicting or explaining the value of Y

e = e is the error term; the error in predicting the value of Y, given the value of X

The simple linear regression of each indicator of independent variable with each measures of dependent variable (Debt Ratio) will give an idea which of the indicators of independent variables is having significant impact on the Debt Ratio.

- **The 't' test:** To determine the existence of a significant linear relationship between the dependent (Debt Ratio) and independent variable (determinants), a hypothesis test - the 't' test concerning whether β_1 (the slope of the regression line) is equal to zero is conducted. If the null hypothesis (mentioned in section 3.2) is rejected, one can conclude that there is evidence of linear relationship. The best and only significant predictors, which have significant impact on the Debt Ratio, where significance of 't' statistics at (alpha=.05), and (alpha=.01) is tested are selected for the next stage of analysis. This is done so because in this study several debt measures have been used along with 14 independent variables represented by 34 indicators. This step significantly reduces the number of variables entering into multiple regression equation which is the third stage of analysis.

2. ***Second Stage of Analysis-* Detecting Multicollinearity**: *In the second stage of analysis*, a correlation structure among various indicators of determinants is examined. Since each independent factor (determinant) has been defined in several ways and more than one indicator has been selected for some factors, multicollinearity may exist between some of them.

   When two independent variables are highly correlated, they both basically convey the same information. Multicollinearity refers to a situation in which two or more explanatory variables in a multiple regression model are highly correlated. When the correlation between two independent variables is equal to 1 or -1, perfect multicollinearity exists. When multicollinearity exists, between any two independent variables, the collinear variables do not provide new information as they essentially measure the same thing and it becomes difficult to separate the effect of such variables on the dependent variable. Multicollinearity results in increased standard error of estimates of the ß's and it becomes difficult to come up with reliable estimates of their individual regression coefficients and may lead to misleading results.

To detect multicollinearity, one of the options is to examine the correlation structure between all the predictors. Hence in the second stage of analysis, a correlation structure among various indicators of determinants is examined. The correlation matrix depicts significant (two tailed) correlations, significant at 5% ($p<.05$) and 1% ($p<.01$) levels. From the first step only significant predictors (independent variables), which have significant impact on a particular measure of the Debt Ratio, are selected and correlation among them is examined. If significant correlations exist among the selected variables, this would mean that multicollinearity exists. One of the easiest ways to tackle multicollinearity is to drop one of the collinear variables or avoid simultaneous use of collinear variables. In this study, we have selected the second option, where care is taken to avoid simultaneous use of collinear variables in the multiple regression equation.

- **Variance Inflationary Factor (VIF):** Another method of measuring collinearity is examining the **Variance Inflationary Factor (VIF)** of each explanatory variable. "The variance inflationary factor shows how the variance of an estimator is inflated by the presence of multicollinearity", Gujarati D (4^{th} edition, pg 351)[5].

$$\text{Variance inflationary factor (VIF)} = \frac{1}{1-R_j^2}$$

Where, R_j is the multiple correlation coefficient. $(1- R_j^2)$ is also called as tolerance. The tolerance is the percentage of the variance in a given predictor that cannot be explained by the other predictors. When the tolerances are close to 0, there is high multicollinearity and the standard error of the regression coefficients would be inflated. "If a set of explanatory variables is uncorrelated, then VIF_j is equal to 1. If the set is highly intercorrelated, then VIF_j may exceed even 10", Levine *et.al* (2003, pg.538)[4]. Thus If $VIF_j \geq 10$ then there is a problem with multicollinearity. Some statisticians suggest that to be on the conservative side, even if VIF_j exceeds 5, the regression model should be used with caution.

If multicollinearity exists, the variable with the largest VIF value is deleted. In this way we can make certain that multicollinearity problem, if any, among the predictors is solved. Variance inflationary factors for each multiple regression conducted in the third stage of analysis are reported in this study.

3. ***Third Stage of Analysis-* Multiple Regression Technique:** In the *third stage* of analysis, in this study, the impact of determinants on capital structure of companies has been analyzed by using multiple regression technique. Multiple Regression is a technique with which one can ascertain the joint effect of a set of independent variables in explaining a proportion of the variance in a dependent variable. It is an extension of simple regression technique where instead of a single explanatory variable, several explanatory variables can be used to predict the value of a dependent variable.

   The multiple regression model used to estimate the impact of each of the indicators of explanatory variables on the dependent variable (Debt Ratio) is:

   $Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \ldots\ldots \beta_n X_n + e$

   Where

   Y = The value of the Dependent variable (Y), what is being predicted or explained.

   a = Constant term of the model.

   β_1, β_2, β_3, β_4, β_5, β_6, β_n are the coefficients of the independent variables.

   X_1, X_2, X_3, and X_n are the independent variables which are predicting or explaining the value of Y.

   e = e is the error term; the error in predicting the value of Y, given the value of X

   Since each independent variable has been defined in several ways, several combinations of these indicators with indicators of other independent variables are possible. Hence, several combinations are tried to find out the best combination which can predict the selected measure of dependent variable (Debt Ratio). Care is taken that no two indicators of same independent variable are taken together while performing multiple regressions. Several combinations are tested and a number of test runs are conducted for each measure of dependent variable.

To conduct the statistical analysis, SPSS (Statistical Package for Social Sciences), a statistical software has been used. In this study, along with standard model where all the specified independent variables enter the regression equation at once, stepwise multiple regression method has also been used. In the standard model, since we want to observe the relationship between the entire set of independent variables and dependent variables, all the independent variables are entered by SPSS regardless of their significance levels.

- **The Coefficient of Multiple Determination (R^2)** measures the proportion of the variation in dependent variable 'Y' that is explained by a set of independent variables selected. "R^2 is an accurate value for the sample drawn but is considered an optimistic estimate for the population value. The adjusted R^2 is considered a better population estimate and is useful when comparing the R^2 values between models with different number of independent variables," George & Mallery (2006, page 203)[6]. Hence in this study, for multiple regression analysis, both R^2 and adjusted R^2 are observed, particularly when comparison are being made between two regression models that predict the same dependent variable but have different number of independent variables.
- **'t-tests'** are used to assess the statistical significance of individual ß coefficients (regression coefficients), specifically testing the null hypothesis that the regression coefficient is zero. The rule of thumb adopted is to drop all variables not significant at the 5% level or 1% level from the equation.
- **'F test'** is used to test the significance of R^2 or the significance of the regression model as a whole. It is used to test the null hypothesis that all the slopes are equal to zero. F= test statistic from an F distribution, is a function of R^2, the number of independents, and the number of cases. F is computed with k and (n - k - 1) degrees of freedom, where k = number of independent variables in the regression model. At 5 % and 1% level of significance level, if p-value is < .05, or < .01 (depending on the level of significance), then the model is considered significantly better than would be expected by chance and we reject the null hypothesis of no linear relationship of Y (dependent variable) to the independent variables.

- **'p-value'** is the observed level of significance and is the smallest level at which the null hypothesis can be rejected for a given set of data. If the p-value for one or more coefficients is less than 0.05 level of significance, then these coefficients can be called statistically significant, and it can be inferred that the related independent variables affect the dependent variable 'Y'.

4. **Stepwise Regressions:** To confirm the results of standard model of regression, stepwise regression method has been employed in this study. In the standard regression model, since we want to examine the impact of whole set of the independent variables together on the dependent variable, all the independent variables enter the regression equation at once. "An important feature of stepwise process is that an explanatory variable that has entered into the model at an early stage may subsequently be removed after other explanatory variables are considered. In stepwise regression, variables are added or deleted from the regression model at each step of model building process. The stepwise procedure terminates with the selection of a best fitting model, when, no additional variables can be added to or deleted from the last model fitted", Levine *et.al* (2003, page 542)[4]. In stepwise procedure, a new regression is run for each new variable that is considered to be included in the model in order to see if the variable is beneficial to the model and how beneficial it is. In this method, SPSS enters the independent variable with highest 't' statistic and continues entering these variables until there are no variable is left with 't' statistic that have significance values less than .05. The stepwise process comes to an end when the best fitting model is selected and when no more independent variables can be added or deleted or would make any significant difference to model R^2.

Since this study uses a fixed sample of 140 companies covering a span of 18 years from 1990-91 to 2007-08, to carry out multiple regressions, the values of all the independent variables and dependent variable have been calculated for each company of the sample of 140 companies for each year from 1991 to 2008. The ratios used as indicators for the dependent and explanatory variables have been calculated for each year and for each company and then are averaged over the time period of 18 years.

3.4.3 Specification of the model for Determinants of Capital Structure for Industry-Wise Analysis:

To identify the industry-wise Determinants of Capital Structure of FDI Companies in India, empirical examination based on Industry-wise classification of companies is also carried out. Same technique of analysis (Multiple regression technique) as applied for company level analysis (Section 3.4.2) has been applied to examine the impact of various determinants (independent variables) on capital structure of companies belonging to a particular industry group. Out of the final sample set of 140 FDI Companies representing 11 industries, three major industry groups having at least 15 member companies are selected for industry-wise analysis. This is necessary for having at least ten data points for conducting multiple regression analysis. This condition is satisfied for three industries: Chemicals, Machinery and Transport Industry.

3.5 Dependent and Independent Variables Defined

The empirical literature on the Determinants of Corporate Capital Structure done in Chapter-2, Section II- 2.3 has revealed that, researchers have analyzed the applicability of specific determinants and their effects on the company's Debt-Equity choice. e.g., whether they are positively or negatively related to various measures of Capital Structure and researchers have interpreted the results by relating them to various Capital Structure theories.

3.5.1 Measures of Capital Structure

Based on previous studies, this study has employed variety of Long Term and Short Term Debt measures to analyze the effect of potential Determinants of Capital Structure. "Since hundreds of articles have been written about capital structure and its determinants since the 1958 paper by MM, one must be aware of the fact that different measures of Capital Structure exist, and that each Capital Structure measure itself can be measured in different ways," Song (2005,page5)[7]. "Given the observed differences in the composition of liabilities, before undertaking any investigation of leverage it is appropriate to define what we mean by this term. Clearly, the extent of leverage and the most relevant measure depends on the objective of analysis." Rajan & Zingales (1995, page 8)[8].

The various measures of Capital Structure employed in this study are divided into three major categories- Short Term Debt Ratios, Long Term Debt Ratios and Total Debt Ratios. Bevan & Danbolt (2000)[9] had employed a variety of Long and Short-Term Debt components instead of using aggregate gearing measures and had found significant differences in the determinants of short term and Long Term Debt Ratios. They had also decomposed Short Term and Long Term Debt Ratios into further sub components that make up Short Term and Long Term Debt, like Trade Credits and equivalent, Short Term Bank Borrowings etc. Following Bevan & Danbolt (2000)[9], various Long Term and Short Term Debt measures have been applied in this study to study the effect of Capitals Structure Determinants on these measures.

The various Capital Structure measures selected for the study are categorized into three major heads:

a) Short Term Debt Ratios

b) Long Term Debt Ratios

c) Total Debt Ratios

3.5.1.1 Short Term Debt Ratios

Bevan & Danbolt (2000)[9] had analyzed several components of Short Term Debt separately. Kakani (1999)[10] had calculated Short Term Debt ratio as (Current Liabilities & Provisions)/Book value of equity. Previous researchers except Bevan & Danbolt (2000)[9] and Kakani (1999)[10], have not explicitly mentioned the composition of Short Term Debt, but it is generally understood that Short Term Debt would be used mainly for funding working capital requirements. In this study, for calculation of Short Term Debt Ratios, Short Term Debt is decomposed further. Two major variants of Short Term Debt have been used:

i) Short Term Debt (STD) = Short Term Bank Borrowings repayable in less than one year + Commercial Paper and

ii) Short Term Debt1 (STD1) = Short Term Bank Borrowings repayable in less than one year + Commercial Paper + & Provisions

In calculation of STD, Short Term Bank Borrowings and Commercial Paper have not been considered as a part of Current Liabilities.

Short Term Bank Borrowings represent the secured as well as unsecured loans taken from banks for a period of less than twelve months. Commercial Paper is a short-term, unsecured promissory note issued at a discount to face value by companies with a minimum maturity period of 15 days and a maximum maturity of 1 year. Both are included as a part of Short Term Debt (STD) and are not treated as a part of current liability due to their explicit nature of borrowings.

The various measures of Short Term Debt Ratios are:

1. Short Term Bank Borrowings Repayable in Less than One Year +Current Portion of Long Term Debt) / Total Assets: Following Bevan & Danbolt (2000)[9] this was the first Short Term Debt measure selected. Current portion of Long Term Debt

represents the total amount of long-term debt that must be paid within the next year. This current portion of Long Term Debt along with short term bank borrowings as compared to total assets will denote the immediate risk profile of the companies and would give an idea of immediate payments a company will have to make apart from Current Liabilities.

2. Short Term Debt / Total Assets: Following Pandey I.M (2001)[3], Bhaduri (2002)[11], Bukherna *et.al* (2005)[12] , this Short Term Debt measure is selected as it shows how much of the assets of the company are financed through Short Term Debt funds.

3. Short Term Debt1 / Total Assets: This measure differs from the previous one with regards to inclusion of Current Liabilities and Provisions in calculation of Short Term Debt.

4. Total Trade Credit & Equivalent /Total Assets: Trade Credit and equivalent consists of Trade Credit and other Current Liabilities. This measure is not a variant of Short Term Debt but a subcomponent of STD1 and with this measure the contribution of Trade Credit and other Current Liabilities as a source of short term finance for Indian companies can be found out.

Titman& Wessel's (1988)[13] and Kakani (1999)[10] had measured Short Term Debt as a proportion to book value of equity. Hence the next measure of Short Term Debt ratio selected is:

5. Short Term Debt / Net worth: Since even the Short Term Debt lenders like banks or even creditors can have a prior claim or almost equal claim, equal to Long Term Debt lenders in case of liquidation of a company, their relationship with owners funds is important.

6. Short Term Debt1 / Net worth: This measure differs from the previous one with regards to inclusion of Current Liabilities and Provisions in calculation of Short Term Debt. This is a Short Term Debt ratio which measures the extent to which the company is using creditor funds versus their own investment to finance the business.

3.5.1.2 Long Term Debt Ratios

7. Bank Borrowings Repayable In More Than One Year/Total assets: Following Bevan & Danbolt (2000)[9] this measure is selected to find whether long term bank borrowings play an important role in financing of assets of companies in India and what determinants play an important role in obtaining these loans from banks.

8. Long Term Debt/ Total Assets: Following Bevan & Danbolt (2000)[9], Pandey I.M (2001)[3], Bhattacharyya & Banerjee(2001)[14], Bhaduri (2002)[11], Jong *et.al* (2005)[15] and Bukherna *et.al* (2005)[12] this debt ratio is selected as it shows how much of the assets of the company are financed through Long Term Debt funds.

9. Long Term Debt / Net worth: Following Titman & Wessels (1988)[13], Mittal & Singla (1992)[16], Kantawala (1997)[17], Kakani (1999)[10], Garg & Shekhar (2002)[18] and Gupta (2004)[19] this measure was selected. This is the most accepted measure of long term financial solvency of a company and expresses relationship between borrowed funds and owner's capital. This ratio shows the relative proportion of debt funds verses equity funds that make up the Capital Structure of a company. While calculating this ratio, only long term liabilities have been included.

10. Long Term Debt / (Net worth+ Long Term Debt): Following Rao & Lukose (2002)[20] and Huang & Song (2002)[21] this measure was selected. Here the borrowed funds are related to total capitalization (capital employed) of a company. Capital employed is basically the long term funds employed in a business which includes both shareholders equity as well as Long Term Debt funds. This ratio indicates what proportion of capital employed of the company is made up of Long Term Debt.

11. Long Term Debt/ Short Term Debtl: This ratio will indicate change in the composition of debt if any over the period of study and the profile of debt financing used by Indian companies.

3.5.1.3 Total Debt Ratios

12. Total Debt / Total Assets: Following Kakani (1999)[10], Das & Roy (2005)[22], Drobetz & Fix (2003)[23], Bukherna *et.al* (2005)[12]. This measure was also employed by Rajan & Zingales (1995)[8]. They believed that, this measure might provide good indication of whether the firm is at risk of default any time soon. Here Total Debt includes Short Term Debt and Long Term Debt.

Total Debt = Long Term Debt + Short Term Debt

In this measure Current Liabilities and Provisions are not added to Total debt.

13. Total Liabilities (Non Equity) / Total Assets: This measure differs from earlier measure as in this measure; Current Liabilities and Provisions have also been included to calculate Total Liabilities of companies. Here,

Total Liabilities = Long term Debt + Short Term Debt1

According to Rajan & Zingales (1995)[8], "The broadest definition of stock leverage is the ratio of Total Liabilities over to total assets. This is a measure of what is left for shareholders in case of liquidation." Thus following Rajan & Zingales (1995)[8], Bevan & Danbolt (2000)[9], Bhaduri (2002)[11], Drobetz & Fix (2003)[23], Gupta (2004)[19] and Bhole & Mahakud (2004)[24] the measure Total Liabilities to Total assets has been selected as one of the measures of leverage. According to Rajan & Zingales (1995, page 8)[8], although this is a broadest definition of leverage ,this measure does not provide indication of whether the company is at risk of default any time soon, neither does it provide a correct picture of past financing choices, because it is greatly influenced by non financial factors, like Trade Credit is used for transactions purposes, and not as financing, including accounts payable may distort the level of leverage. At the same time however it was pointed out by Rajan & Zingales (1995)[8] that in countries, or specific classes of companies who use Trade Credit as a means of financing, accounts payables should be included in measures of leverage. Thus following their opinion, this study has employed measures of leverage where Trade Credit as well as Accounts Payables have been included in the leverage measures and some other measures where they are excluded to project a correct picture of past financing choices by the companies.

14. Total Debt / Net Worth: Bhat (1980, page 453)[25] had argued that short term debt component is included in the ratio as, such borrowings account for a larger proportion of companies liabilities and they are continually being repaid and renewed and that Short Term Debt and Long Term Debt have considerable substitutability for each other. Here, in this measure, Total Debt includes Short Term Debt and Long Term Debt.

Total Debt = Long Term Debt + Short Term Debt

In this measure Current Liabilities and Provisions are not added to Total debt. Since this measure was calculated without adding Current Liabilities and Provisions, following variant of Total Debt ratio was selected.

15. Total Debt / (Total Debt+ Net worth): This measure was employed by Rajan & Zingales (1995)[8], Booth *et. al* (2001)[26], Huang & Song (2002)[21] and Drobetz & Fix (2003)[23], Rajan & Zingales (1995)[8], argued that the effects of past financing decisions is probably best represented by this measure.

16. Total Liabilities / Net worth: Garg & Shekhar (2002)[18], Gupta (2004)[19] felt that if other liabilities are treated as debt equivalent, then these have to be added to Long Term Debt. Hence following them, after including Current Liabilities and Provisions to Total debt, this measure was selected. The difference between the measure (14) Total Debt/Net worth and this measure is only with respect of inclusion of Current Liabilities and Provisions. As Khan & Jain (4th Edi, pg 7.10)[27] had mentioned, "Individual items of Current Liabilities are certainly short term and may fluctuate widely, but as a whole, a fixed amount of them is always in use so that they are available more or less on a long term footing." It is also pointed out by Khan & Jain (4th Edi, pg 7.10)[27] that Current Liabilities have, like long term lenders, have prior right on the assets of the business and are paid along with long term lenders at the time of liquidation of the company. Considering this, it is logical to include measures of leverage which include Current Liabilities and this measure indicates proportion of total amount contributed by outsiders to the amount provided by owners of the business. Here,

Total Liabilities = Long Term Debt +Short Term Debtl

The various measures of Capital Structure (Debt Ratios), their abbreviations selected have been listed in Table 3.3.

Averages of these Debt measures over the period of study have been taken. All the Debt Ratios in this study have been measured in book values. Deb (1995, page 72)[28] had considered book value figures for calculation of debt as he believed that historical figures reflect the cumulative effect of funding pressures. Drobetz & Fix (2003)[23] had pointed out that, "The market value of equity is dependent on a number of factors which are out of direct control for the company. Therefore, using market values may not reflect the underlying alterations within the company. In fact, corporate treasurers often explicitly claim to use book ratios to avoid distortions in their financial planning caused by the volatility of market prices."

Song (2005)[7] quoting Brealey and Myers (2003)[29] put forth the argument, "that it should not matter much if only book values are used, since the market value includes the value of intangible assets generated by for instance research and development, staff education, advertising, and so on. These kinds of assets cannot be sold with easiness, and in fact, if the company goes down, the value of intangible assets may disappear altogether. Hence, misspecification due to using book value measures may be fairly small, or even totally unessential." Hence in this study, book value of equity has been used to compute Debt Ratios. For calculation of Debt Ratios, Net worth is defined as: (Equity Capital + Preference Capital + Reserves & Surplus – Revaluation Reserve – Miscellaneous Expense not written off)

Table 3.3			
Measures of Debt Ratios			
Sr. No	Dependent Variable (Debt Ratios)	Abbreviation	Category
1	Bank Borrowings Repayable in Less than One Year / Total assets	STBB+CPLTD/TA	STDRatio1
2	Short Term Debt / Total Assets	STD/TA	STDRatio2
3	Short Term Debt1/ Total Assets	STD1/TA	STDRatio3
4	Total Trade Credit & Equivalent / Total Assets	TC&E/TA	STDRatio4
5	Short Term Debt/ Net Worth	STD/NW	STDRatio5
6	Short Term Debt 1/ Net Worth	STD1/NW	STDRatio6
7	Bank Borrowings Repayable in More than One Year/ Total Assets	LTBB/TA	LTDRatio1
8	Long Term Debt/ Total Assets	LTD/TA	LTDRatio2
9	Long Term Debt / Networth	LTD/NW	LTDRatio3
10	Long Term Debt / (Networth + Long Term Debt)	LTD/(NW+LTD)	LTDRatio4
11	Long Term Borrowings / Short Term Borrowings 1	LTD/STD1	LTDRatio5
12	Total Debt / Total Assets	TD/TA	TDRatio1
13	Total Liabilities / Total Assets	TL/TA	TDRatio2
14	Total Debt / Networth	TD/NW	TDRatio3
15	Total Debt/ Total Debt+Networth	TD/(TD+NW)	TDRatio4
16	Total Liabilities/ Networth	TL/NW	TDRatio5
Note: STD Ratio = Short Term Debt Ratio, LTD Ratio = Long Term Debt Ratio, TD Ratio = Total Debt Ratio			

3.5.2 Determinants of Capital Structure of a Firm

The basis of selection of independent variables is the existing empirical literature on Determinants of Capital Structure. The choice of variables may be based on the predictions of Capital Structure theories, as discussed in section (2.1- Review of Capital Structure Theories, chapter-2), but Booth *et.al* (2001, page99)[26] had pointed out that, "Empirically, distinguishing between these hypotheses has proven difficult. In cross-sectional tests, variables that describe the Pecking Order Theory can be classified as Static tradeoff or Agency theoretic framework and vice-versa". Hence Booth *et.al* (2001)[26] believed that it is better to explain Capital Structure choice by using cross sectional tests and a variety of variables that can be justified using any or all of the three models. Frank & Goyal (2004, page 6)[30] explained that, "The theories are not developed in terms of standard accounting definitions. In order to test the theories it is necessary to make judgments about the connection between the observable data and the theory. While many of these judgments seem uncontroversial, there is room for significant disagreement in some cases." Hence instead of trying to select variables that determine Capital Structure on the basis of various propositions of competing Capital Structure theories, in this study, a wide variety of variables have been selected which in turn may prove predictions of any of these Capital Structure theories true in Indian context.

The following determinants had been used in previous studies on Capital Structure in India and in foreign countries. In this section, the results of earlier empirical studies have been discussed in context of various important variables to be selected for our study. Two lists are prepared. First list denotes the variables / factors / determinants selected in this study for the purpose of studying their impact on Capital Structure of FDI Companies in India. Along with the determinants, various indicators used to define the determinant and their specifications are also listed. The second list denotes factors which have not been incorporated in this study.

3.5.2.1 List of determinants selected for the purpose of studying their impact on Capital Structure of FDI Companies in India.

1. Size:

It is believed that in a large firm with diversified operations, the risk of default is less, they are likely to be less susceptible to financial distress and as a result may have better access to external financing thus resulting in higher leverage. "Large multiproduct firms may be less risky than small one product firms and therefore may be able to tolerate higher debt ratios", Remmers *et.al* (1974, page 1)[37]. The cost of issuing debt and equity securities is also related to firm size. "Large firms may be able to take advantage of economies of scale in issuing Long Term Debt, and may even have bargaining power over creditors. So the cost of issuing debt and equity is negatively related to firm size". Huang & Song (2002, page 7)[21]. Their findings confirmed their belief and they found out that leverage increased with company size.

Small firms have to pay much more than large firms to issue new equity or to issue Long Term Debt and several restrictive covenants may be imposed to obtain long term loans. This suggests that small firms might prefer to use Short Term Debt rather than Long Term Debt. The relationship of leverage with size of a firm might also depend on whether the leverage measure is based on Short Term Debt or Long Term Debt. Agency costs of debt are supposed to be lower for larger companies and hence the tradeoff theory suggests a positive relationship between size and leverage, but according to Pecking Order Theory the relationship between size and leverage is not clear. The evidence from empirical research also gives contradictory results.

Rajan & Zingales (1995)[8] stated that the effect of size on leverage is ambiguous as size may be an inverse proxy for the probability of bankruptcy and in that case should have a positive impact on the supply of debt but if size is a proxy for the information outside investors have, then it would increase their preference for equity relative to debt. They in their concluding remarks had stated that they could not understand why size matters as they found that larger firms had high leverage and thus had found contradictory results themselves in their study. Rajan & Zingales (1995)[8], Bevan & Danbolt (2000)[9], Booth *et.al* (2001)[26], Pandey I.M (2001)[3], Huang & Song (2002)[21], Bhaduri (2002)[11], Baral (2004)[32], Sogorb-Mira *et.al* (2003)[38], Bhole & Mahakud (2004)[24], Akhtar (2005)[35], Jong *et.al* (2005)[15] found a positive relationship between company size and leverage.

Titman &Wessel's (1988)[13] believed that small firms may be more leveraged than large firms and may prefer to borrow short term rather than issue Long Term Debt because of the lower fixed costs associated with this alternative. Their findings supported this belief. Song (2005)[7] found out that size was positively related to Total Debt and Short Term Debt ratio but was negatively related to Long Term Debt ratio. Even Chen (2003)[39] found negative relationship between firm's size and Long Term Debt. They felt that the negative relationship between size and Long-Term Debt may be due to the fact that large firms have better access to capital markets for equity finance because of their reputation in the markets and the attraction of the capital gains in the secondary markets.

Some studies such as Bhat (1980)[25], Kakani (1999)[10], Gupta (2004)[19] found firm size as having no significance in deciding the leverage level of firm. Thus size as a determinant of Capital Structure has been studied by many authors and has been included in this study as it is assumed that size affects the leverage of a firm.

Following Bhat (1980)[25], Titman & Wessel's (1988)[13], Bevan & Danbolt (2000)[9], Booth *et. al* (2001)[26], Manos & Green (2001)[31], Pandey I.M (2001)[3], Huang & Song (2002)[21], Drobetz & Fix (2003)[23], Baral (2004)[32], Song (2005)[7], Guha & Kar (2006)[33], the **first measure** used to study company size is a: i) **Natural Logarithm of Sales.** Here sales represent net sales, net of indirect taxes. According to Bhat (1980, page 453)[25], "Since the absolute size distributions of companies is highly skewed, i.e. there are few large companies and large number of small companies, it is appropriate to use logarithm of this variable than its absolute value". According to Levine *et.al* (2003, pg.535)[4], "The logarithm transformation is often used to overcome violations to the homoscedasticity assumption". This assumption means that, "the variance around the regression line (which is the line of average relationship between Y and X) is the same across X values; it neither increases or decreases as X varies", Gujarati D (2003, page 68)[5].

According to Bhattacharyya & Banerjee (2001, page 44)[14], higher the firms size in terms of assets in place, the higher the debt ratio. They believed that higher the tangible fixed assets of a company, the greater would be the debt capacity as tangible fixed assets provide security (primary or collateral) in raising debt. Following Bhattacharyya & Banerjee (2001)[14], the **second measure** used to study company size is a: ii) **Natural Logarithm of Gross Total Fixed Assets (net of revaluation).** Here Gross Total Fixed Assets are net of revaluation and represent the historical cost of the asset without any adjustments for depreciation.

Following Bhaduri (2002)[11], Rao & Lukose (2002)[20], Gupta (2004)[19], Gonenc (2005)[34], Buferna *et.al* (2005)[12], Akhtar (2005)[35], **the third measure** used to study company size is a: iii) **Natural Logarithm of Total Net Assets.**

Here Total Net Assets mean Gross Total Assets net of cumulative depreciation, revalued assets and deferred revenue expenditure.

Hence the three indicators used to measure Size variable are:

i)Natural Logarithm of Sales

ii) Natural Logarithm of Gross Tangible Fixed Assets (net of revaluation)

iii) Natural Logarithm of Total Net Assets

2. Profitability / Earnings Rate / Profit:

According to Pecking Order hypothesis, firms prefer to use internal funds over external funds for capital expenditure and a profitable firm will have more internal funds at its disposal than a less profitable firm. Myers (1984, page 589)[40] in their modified Pecking Order Theory had pointed out that, "the observed Debt Ratios will reflect the cumulative requirement for external financing-a requirement cumulated over an extended period". Pecking Order Theory suggests negative relationship between leverage and profitability.

The results of Bhat (1980)[25], Titman & Wessel's(1988)[13], Rajan & Zingales (1995)[8], Kantawala (1997)[17], Kakani (1999)[10], Booth *et.al*(2001)[26], Garg & Shekhar (2002)[18], Huang & Song (2002)[21], Drobetz & Fix (2003)[23], Frank & Goyal (2004)[30], Gupta (2004)[19], Baral (2004)[32], Song (2005)[7], Tong & Green (2005)[36], Akhtar (2005)[35]are consistent with the Pecking Order Theory and suggest a negative relationship between profitability of a firm and Debt Ratios. Booth *et.al* (2001)[26] conclude that more profitable the firm, the lower the debt ratio, regardless of how the debt ratio is defined. Pandey I.M (2001)[3] also find out that profitability has a persistent and consistent negative relationship with all types of Debt Ratios in all periods and under all estimation methods.

As against this, according to Trade-off Theory expected bankruptcy costs decline when profitability increases whereas for a less profitable firm, more leverage will increase bankruptcy risk. This would mean that generally an unprofitable firm will avoid debt financing. Another aspect is of the deductibility of corporate interest payments, which might induce more profitable firms to finance with debt. Since higher profitability means higher debt capacity, tradeoff theory predicts positive relationship between leverage and profitability. Except some few researchers like Buferna *et.al* (2005)[12] who found positive relationship between leverage and profitability, most of the previous studies confirmed the pecking order hypothesis in respect to impact of profits on Capital Structure. It is assumed in this study that profitability of a firm will influence its Capital Structure.

Profitability has been measured by using five indicators. Following Bhat (1980)[25], Titman & Wessel's (1988)[13], Pandey I.M (2001)[3], Huang & Song (2002)[21], Garg & Shekhar (2002)[18], Drobetz & Fix (2003)[23], Baral (2004)[32], Gupta (2004)[19], Song (2005)[7], Tong & Green (2005) [36], the first measure of profitability used is:

i) Ratio of Profit before Interest and Tax to Total Assets: PBIT/TA (Net Assets): (PBIT) an indicator of a company's profitability is calculated as revenue minus expenses, excluding tax and fixed interest charges. PBIT is also referred to as "operating profit". Bhat (1980)[25] suggest that exclusion of fixed charges, among other things, a more appropriate measure of inter-company comparison because differences among companies in financial structure, reflected in different interest charges will not affect the ratio. As the numerator is net of depreciation, the denominator represents Total Net Assets; where to calculate Total Assets; Fixed Assets net of depreciation have been taken. This first measure is also interpreted as Return on Assets.

Several previous researchers have used several other variants of Return on Assets to denote profitability. Bevan & Danbolt (2000)[9], Jong *et.al* (2005)[15], Rao & Lukose (2002)[20] used Profit Before Interest, Taxes, Depreciation and Amortization to Total Assets as indicator to denote profitability. Kantawala (1997)[17] used Profit Before Tax to Total Net Assets, Manos & Green (2001) used Profit Before Tax to Book value of Total Assets and Akhtar (2005)[35], Gonenc (2005)[34] used Net Profit to Total Assets as their profitability measure.

Hence the second variant of Return on Assets employed to measure profitability is:

ii) Ratio of Profit before Interest, Taxes, Depreciation and Amortization to Total Assets (Gross): Since depreciation is not deducted from profit measure in the numerator, in the denominator to calculate Total Assets, Gross Fixed Assets including depreciation have been taken and hence Total Assets are referred to as Total Gross Assets.

The third variant of Return on Assets used to denote profitability is:

iii) Profit Before Tax to Total Assets (Net Assets): As Profit Before tax is net of depreciation and denotes profit after charging all expenditure and Provisions except tax provision, in the denominator, to calculate Total Assets, Net Fixed Assets net of depreciation have been taken.

Following Titman & Wessels (1988)[13], Kantawala (1997)[17], Drobetz & Fix (2003)[23], Gupta (2004)[19] the fourth measure of profitability is: **iv) Ratio of Profit Before Interest and Tax to Sales:** This measure is also referred to as Gross Margin on Sales.

Following Kakani (1999)[10] the fifth measure employed is: **v) Ratio of Profit before Interest and Tax to Capital Employed**: This measure is also referred to as Return on Capital Employed. Kakani (1999)[10] used PBDIT to Capital Employed (Net worth +Long term Debt) as their measure of profitability. This study has considered PBIT to maintain consistency by having denominator net of depreciation as well as the numerator net of depreciation. Here Capital Employed is calculated as:

Equity Capital + Preference Capital + Reserves & Surplus – Revaluation Reserves – Misc Expense not written off + Total Borrowings – Short Term Bank Borrowings and Commercial Paper

Bhaduri (2002)[11] had selected two indicators cash flow to sales and cash flow to total assets as their measures of profitability. Since information on cash flows is available in PROWESS database only since 2001 and this study needed data from 1991 to 2008, this measure has not been included in the study.

3. Collateral / Tangibility / Asset Composition / Asset Structure:

The composition of a firm's assets or the type of assets owned by a firm affect the Capital Structure of a firm. Booth *et.al* (2001)[26] pointed out that if a firm has more tangible assets, its ability to issue secured debt is increased and the less information is revealed about future profits. They find out that more tangible the asset mix, the higher the Long Term Debt ratio, but smaller the Total Debt ratio.

If there are no assets to act as collaterals for debt, creditors may require more favorable terms and firms instead of borrowing on these strict terms, may opt for equity financing rather than debt financing. Hence most of the Capital Structure theories state that collateral value of assets (tangibility) is positively related to leverage. But as pointed out by Kakani (1999)[10], collateral value may be positively related to Total Debt and Long Term Debt but collateral's effect on Short Term Debt is not clear. Song (2005)[7] found that tangibility had a positive relationship with Total Debt and Long Term Debt Ratios and was negatively related to

Short Term Debt Ratios. Their results supported the maturity matching principle according to which, Long Term Debt is used to finance fixed assets while Short Term Debt is used to finance non-fixed assets.

The Trade-off Theory also suggests that firms with tangible assets that can be used as collateral are expected to use more debt. Kantawala (1997)[17] found that asset structure had positive and significant relationship with debt-equity ratio. Huang & Song (2002)[21], found that tangibility had positive effect on Long Term Debt ratio. Drobetz & Fix (2003)[23] found tangibility positively correlated with leverage. Frank & Goyal (2004)[30] concluded that firms having more collateral tend to have more leverage. According to Rajan & Zingales (1995)[8], the greater the proportion of tangible assets on the balance sheet (fixed assets divided by total assets), the more willing should lenders be to supply loans, and leverage should be higher. Titman & Wessel's (1988)[13] had found out in their study that Debt Ratios were not related to collateral value of assets. Even Bhaduri (2002)[11] found that collateral value of assets was insignificantly associated leverage.

A very important aspect which needs to be pointed out is that some authors have distinguished between collateral and tangibility affect. Garg & Shekhar (2002)[18] used asset composition and collateral value of assets as two independent variables, whereas in some studies, to denote collateral effect and asset composition same variable has been used and is defined in two or more ways to denote the collateral effect or asset composition on Capital Structure. Frank & Goyal (2004, page 3)[30] had pointed out in their study that, "replacing collateral with tangibility is unlikely to matter. Collateral and tangibility differ in that collateral includes inventories while tangibility does not, inventories usually support short-term debt." Although in this study, collateral and tangibility effect has not been dealt separately, several indicators have been used to measure collateral effect and one of them also measures the proportion of inventory to total assets, so both the effects would be reflected.

Following Mittal & Singla (1992)[16], Kantawala (1997)[17], Bevan & Danbolt (2000)[9], Pandey I.M (2001)[3], Huang& Song (2002)[21], Garg & Shekhar (2002)[18], Rao & Lukose (2002)[20], Drobetz & Fix (2003)[23], Gupta (2004)[19], Gonenc (2005)[34], Song (2005)[7], Buferrna *et.al* (2005)[12], Akhtar (2005)[35], Guha & Kar (2006)[33] the first measure of Tangibility or collateral factor is:

i) Fixed Assets (Net) / Total Assets (Net): Here in the numerator, Fixed Assets denote Net Fixed Assets, net of depreciation and hence denominator also denotes Total Net Assets.

Kantawala(1997)[17] had also employed Gross Fixed Assets to Total Gross Assets along with the Fixed Assets(Net)/Total Assets(Net) measure, hence following Kantawala(1997)[17], the next measure employed to denote collateral effect is:

ii) Gross Fixed Assets / Total Gross Assets where Gross Fixed Assets in the numerator refer to Fixed Assets before depreciation and hence denominator is taken as Total Gross Assets.

Following Kakani (1999)[10], Garg & Shekhar (2002)[18], Bhole & Mahakud (2004)[24], Gupta (2004)[19] the next measure employed to denote collateral value of assets is:

iii) (Net Fixed Assets + Inventory + Accounts Receivable) / Total Assets (Net)

According to Bhaduri (2002, page 202)[11] values of the collateral assets can depend on maturity structure of the debt instruments. Hence instead of using an aggregate indicator, Bhaduri (2002)[11] had employed separate measures as Land & Building / Total Assets, Plant & Equipment / Total Assets and Inventories/Total assets as a measure for collateral value. Following Bhaduri (2002)[11], the next three measures to denote collateral effect are:

iv) Land & Building (Gross) / Total Gross Assets

v) Plant & Equipment (Gross)/ Total Gross Assets

vi) Inventories / Total Assets (Net)

4. Volatility / Risk (Earnings Volatility) / Business Risk / Bankruptcy costs / Variability / Financial Distress:

It is said that certainty and regularity of future income of a firm influences its Capital Structure. According to Mittal & Singla (1992, page 300)[16], "Business risk depends on a number of factors which include demand variability, selling price variability, input price variability, and level of fixed costs. Unstable earnings, whatever their cause may be, make the option of debt capital dangerous and the company becomes less attractive to the lenders." According to Trade-off Theory, firms which have variable earnings will use lower debt to avoid risk of bankruptcy, as volatile cash flows increase the chances of default. This suggests negative relationship between earnings volatility and leverage. The Pecking Order Theory also predicts the same negative relationship.

Gonenc (2005, page 51)[34] pointed out that, "fluctuation in profits is used to measure bankruptcy risk. A firm with high level of bankruptcy risk is not expected to have a high level of debt". Bhat (1980)[25] found negative relationship between business risk and leverage. Kakani (1999)[10] found significant negative relationship between volatility of a firm and short term and Total Debt Ratios. Pandey I.M (2001)[3] found earnings volatility to be negatively related to Long Term Debt Ratios and positively related to Short Term Debt Ratios. Huang & Song (2002)[21] believed that volatility or business risk is a proxy for the probability of financial distress and is expected to be negatively related to leverage. However, they found that volatility was positively related to Total Liabilities ratio and conclude that the companies with high leverage in China tend to make riskier investments. Titman & Wessel's (1988)[13], Baral (2004)[32] had found out in their study that Debt Ratios were not related to volatility. Ferri and Jones(1979)[41] also found that variation in income was not associated with leverage. Thus it is presumed that companies having high income variability or volatile incomes would resort to lower debt in their Capital Structure to avoid risks of bankruptcy.

Following Bhattacharyya & Banerjee (2001)[14], Huang & Song (2002)[21] the first indicator selected to measure volatility was: **i) Standard Deviation of Profit before interest and tax (SD of PBIT).**

Titman & Wessel's (1988)[13] employed standard deviation of the percentage change in operating income to measure volatility. Mittal & Singla (1992)[16], Bhaduri (2002)[11] used standard deviation of percentage change in profit before interest and tax as indicator for volatility. PBIT is also referred to as operating income or operating profit. Hence the second measure used to indicate volatility was: **ii) Standard deviation of percentage change in Profit before interest and tax-(SD of %change in PBIT)**

Booth *et. al* (2001)[26] had used variability of the return on assets as a business risk proxy. They calculated return on assets as earnings before interest and tax divided by total assets. Instead of considering PBIT as the numerator, PBITDA is employed as standard deviation of PBIT is already calculated in other measures of volatility. Since PBITDA is considered in the numerator, Total Gross Assets have been considered in the denominator. Hence the next measure used to indicate volatility is: **iii) Standard deviation of Profit before Interest, Tax, Depreciation and Amortization/ Total Gross Assets (SD of PBITDA/TGA)**

Following Bhat (1980)[25], Mittal & Singla(1992)[16], Pandey I.M (2001)[3] ,Garg & Shekhar (2002)[18] ,Gupta(2004)[19] , Baral (2004)[32], the next indicator used to measure volatility is: **iv) Coefficient of variation in Profit before interest and tax-(σ PBIT / μ PBIT)**

Following Kakani (1999)[10], two measures of volatility were selected - **v) Coefficient of variation of return on capital employed-(COV of PBIT to CE) & (vi) Coefficient of variation of Return on Assets--(COV of PBIT to TA)**

5. Growth Rate:

Empirical literature has provided contradictory evidences about the relationship of growth rate of a firm and its leverage. To avoid agency costs, a growing firm may issue short-term debt rather than Long Term Debt. Short-term Debt Ratios might be positively related to growth rates if growing firms substitute short-term financing for long-term financing. The association between growth opportunities and Debt Ratios may be dissimilar for short and long term forms of debt. The Trade-off Theory suggests negative relationship between growth rate of a firm and its leverage as higher growth is linked with higher bankruptcy risk. According to Titman & Wessel's (1988, page 4)[13], "Growth opportunities are capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income". This suggested negative relationship between leverage and growth opportunities. Whereas the Pecking Order Theory suggests a positive relationship between growth and leverage since higher growth would mean greater need of funds and hence need for issuing debt funds.

Pandey I.M (2001)[3], Bevan & Danbolt (2000)[9], Kakani (1999)[10], Baral (2004)[32] found out that growth variables have significant positive relationship with Debt Ratios. Whereas Bhat (1980)[25], Titman &Wessel's (1988)[13], Song (2005)[7] found that firms growth rate did not affect firms leverage.

It is important to point out that Rao & Lukose (2002)[20] had considered growth and growth opportunities as two separate variables. They had used market to book ratio to measure growth opportunities. They measured growth by using the proxy -growth rate in total assets. Huang & Song (2002, page 9)[21] argued that sales growth rate is the past growth experience and Tobin's Q (market to book ratio of total assets) a better proxy for future growth opportunities and they employed both these measures in their study. They found out that firms having high growth rate in the past tended to have high leverage and firms with growth opportunities in future had lower leverage.

Titman & Wessel's (1988)[13] had used capital expenditures over total assets, growth of total assets measured by the percentage change in total assets and research and development over sales as indicators for growth attribute. They argued that firms that generally engage in research and development generate future investments, and hence used research and development over sales as an indicator of future growth opportunities. Bevan & Danbolt (2000)[9] used market to book ratio as a proxy to measure growth opportunities. They found out that those companies which had high level of growth opportunities tended to utilize more long and Short Term Debt. Drobetz & Fix (2003)[23] found out that firms with more investment opportunities apply less leverage. In this study, growth and growth opportunities are not considered as two separate variables, as growth can be there only if growth opportunities exist and hence they are not considered as two independent variables in this study. It is presumed that growth rate of a firm will influence its Capital Structure decision.

Following Bhat(1980)[25], Mittal & Singla (1992)[16], Baral (2004)[32] , (Gupta 2004)[19], the first measure of growth rate is defined as :

i) Compound Annual Growth Rate of Total Assets-(CAGR of TA).

Following (Kakani 1999)[10],(Gupta 2004)[19], Guha & Kar (2006)[33] the second indicator selected to measure growth rate is:

ii) Compound Annual Growth Rate of Sales-(CAGR of Sales)

Compound Annual Growth Rate is the year-over-year growth rate of either total assets or sales over a specified period of time. The Compound Annual Growth Rate is calculated by taking the nth root of the total percentage growth rate, where n is the number of years in the period being considered. This can be written as follows: The time period in this study is eighteen years, from 1990-1991 to 2007-2008, but as growth rate is calculated from 1991 to 2008, number of years would be taken as 17 years beginning from first year 1991 until last figure as on year ending March 2008. The same formula has also been expressed by Bhat (1980) [25], Mittal & Singla(1992)[16]. Compound Growth Rate of Total Assets or Compound Growth Rate in Sales is calculated as:

$$G_i = \sqrt[n]{\frac{(\text{Total Assets or Sales }_i)_n}{(\text{Total Assets or Sales }_i)_0}} - 1$$

$(\text{Total Assets or Sales }_i)_n$ = Total Assets or Sales in the terminal year 2008

$(\text{Total Assets or Sales }_i)_0$ = Total Assets or Sales in the initial year 1991

6. Non - Debt Tax Shields:

In their pioneering paper on, " Optimal Capital Structure under Corporate and Personal Taxation, DeAngelo & Masulis (1980, page 4)[42] wanted to show that existence of non debt tax shield such as depreciation deductions or investment tax credits are sufficient to overturn the Miller's irrelevancy theorem. DeAngelo & Masulis (1980, page21)[42] predicted from their study that, "Ceteris paribus, decreases in allowable investment related tax shields (eg. depreciation deductions or investment tax credits) due to changes in the corporate tax code or due to changes in inflation which reduce the real value of tax shields will increase the amount of debt that firms employ". Non debt tax shields and interest payments on debt both act as tax shields and this implies that existence of Non-Debt Tax Shields would mean lower Debt Ratio for a firm. Thus Non-Debt Tax Shields would be negatively related to firm's leverage.

Empirical studies like Kakani (1999)[10], Bhattacharyya & Banerjee (2001)[14], Huang & Song (2002)[21], Song (2005)[7] confirm this belief. Song (2005)[7] found out that NDTS had a positive effect on Short Term Debt ratio while it was negatively related to Long Term Debt ratio. Titman & Wessel's (1988)[13] had found out in their study that Debt Ratios were not related to non debt tax shields. It is presumed in this study that existence of Non-Debt Tax Shields will affect Capital Structure of firms.

Following Titman & Wessel's (1988)[13], Huang & Song (2002)[21], Drobetz & Fix (2003)[23], Song (2005)[7], Gupta (2004)[19], Akhtar (2005)[35]

i) The Ratio of Annual Depreciation over Total Gross Assets is used as the first indicator to measure non-debt tax shields.

As stated by Bhattacharyya & Banerjee (2001)[14], exporters in India enjoy significant tax concessions and following them the second indicator to measure Non-Debt Tax Shields is:

ii) (Annual Depreciation + Export Turnover) / Total Gross Assets

Drobetz & Fix (2003)[23] had also applied another indicator– the ratio of depreciation over operating profit to measure Non-Debt Tax Shields. Following Drobetz & Fix (2003)[23], the next indicator used to denote Non-Debt Tax Shields is:

iii) Annual Depreciation / Profit before Interest, Tax, Depreciation and Amortization

7. Debt Service Capacity:

According to Mittal & Singla (1992, page 300)[16], "Debt Service capacity shows the relationship between a committed payment and the source for that payment. A high debt service capacity means that a firm can meet its interest burden even if earnings before interest and taxes suffer a considerable decline. Thus higher the DSC, higher should be the debt ratio suggesting a positive relationship between DSC and leverage." According to Bhat (1980)[25], higher the capacity of the firm to serve the debt, the debt ratio of the firm is likely to be higher. Baral (2004)[32] found out from their results that the relationship between debt service capacity and leverage was statistically insignificant. Hence it is assumed that debt service capacity of a firm will affect the Capital Structure of a firm.

Baral (2004)[32] used EBIT / Interest charge during the year as the ratio to measure debt service capacity. Mittal & Singla (1992)[16] used (EBIT + Deprecation) / Interest ratio to measure debt service capacity. Hence following Mittal & Singla (1992)[16], the ratio used to measure debt service capacity is: **i) Profit before Depreciation, Interest and Tax / Interest Payments.** Depreciation does not reflect any actual cash outflows and hence to calculate the actual amount of cash flow available for interest payments, it is added back to PBIT.

8. Age/Life:

It is believed that a young company may find it difficult to raise debt capital and may resort to equity rather than debt capital as lending agencies may doubt their credit standing in the market. Hence age acts as a proxy for reputation. A mature firm which has established its credibility in the market may have easy access to debt funds thus suggesting positive relationship between age of a firm and its leverage. Guha & Kar (2006)[33] wanted to test if age of a firm as calculated from the date of incorporation provided a positive influence on firms attitude towards leverage thus implying high credit worthiness of a firm. They found out that the results contradicted their belief as age did not affect the choice of the debt structure of firm significantly and even if it did effect, the effect was negative indicating that higher the age of a firm, lower is the tendency to use debt as a means of finance. Bhaduri (2002)[11] had argued that young firms are more vulnerable to the problem of asymmetric information and are likely to use debt and avoid equity market. Garg & Shekhar (2002)[18] found life of a firm an important determinant of Capital Structure. Hence it is assumed that age may be an important determinant of Capital Structure.

Garg & Shekhar (2002)[18] & Guha & Kar (2006)[33] had calculated age / life of a company as number of years since establishment, that is, from the date of incorporation. Manos & Green (2001)[31] had employed log of age of the company since incorporation as an indicator for age. In this study the age of a company as on

31st March, 2008 is calculated from the year of incorporation and following Manos & Green (2001)[31], even the log of age of company is calculated.

9. Dividend payout:

Pecking Order Theory states that higher the retention, lower the need for debt capital. This indicates a positive relationship between dividend payout and leverage. Higher dividend payout ratio means lower retentions and greater need of debt funds. As opposed to Pecking Order Theory, the Trade-off Theory states that because of lower levels of debt, dividend payout might be high and this indicates negative relationship between dividend payout and leverage. "The firms, for which the dividend payout is high, will prefer low Debt Ratios since the high debt ratio magnifies the financial risk to equity shareholders associated with debt capital," (Bhat1980, page 452)[25]. Their study proved this belief. Baral (2004)[32] found out that dividend policy did not explain the variation in the leverage ratio. Tong & Green (2005)[36] found positive correlation between current leverage and past dividends supporting the pecking order hypothesis. It is assumed that extent of dividend payout may affect the Capital Structure of firms.

Following Bhat (1980)[25], Baral (2004)[32] the dividend payout of the company has been measured by:

i) The Ratio of Cash Dividends to Earnings Available for Equity Shareholders - (Equity Dividend/Profit after Tax)

10. Liquidity:

A firm's ability to meet its short term obligations as and when they become due is evaluated by liquidity ratios. The liquidity of a firm may affect its Capital Structure in two ways. Firms with greater liquid assets may use these assets to finance their investments. In these cases liquidity is negatively related to leverage. At the same time since liquidity gives an indication of firms' ability to meet obligations, it will increase its debt capacity and thus may be positively related to leverage. Bhole & Mahakud (2004)[24] found that liquidity was negatively related to leverage. It is held that a firm's liquidity position may be an important determinant of Capital Structure decision.

Following Jong *et.al* (2005)[15], Manos & Green (2001)[31], Bhole & Mahakud (2004)[24], the liquidity position of the company is measured by:

i) The Ratio of Current Assets to Current Liabilities-(Current Assets / Current Liabilities).

11. Net Exports:

According to Kakani (1999)[10], "In developing countries such as India, firms which are net exporters, have been given credit benefits such as EXIM credit facility, and forward letter of credit. This implies that firms that are net exporters may have lesser need of debt in their Capital Structure." He had found that in liberalized era, the net exports of a firm had grown important in determining long term and Total Debt Ratios. Hence it is held that level of Net exports may be an important factor determining leverage.

Kakani (1999)[10], had used the average of net exports to sales ratio as an indicator to measure the net exports level of a company. Net exports means the amount by which the total exports of a company in an accounting period exceed its imports during the same period. Following Kakani (1999)[10], in this study, the indicator employed to measure the net exports effect on Capital Structure is:

i) Net exports to Sales ratio: Here, Net Exports = Total Exports (Total Forex earnings) Less Total Imports (Total Forex spending).

12. Cost of Equity:

According to Bhole & Mahakud (2004)[24], if the cost of equity increases, the firm may use more debt than equity and their findings confirmed the expected positive relationship. It is held assumed that cost of equity may affect the Capital Structure of a firm.

Following Bhole & Mahakud (2004)[24] the ratio selected to measure cost of equity is

i) Dividend Payment/(Equity Share Capital + Reserves)

13. Uniqueness

Titman and Wessel's (1988)[13] believed that firms which produce unique or specialized products are expected to be negatively related to Debt Ratios because in case of liquidation their workers and suppliers having specific job skills and customers may find it difficult an alternative servicing for their unique products. They had used expenditures on research & development over sales, selling expenses over sales and labour quit rates as indicators of leverage. Their results had proved their belief. Bhaduri (2002)[11] also used uniqueness as one of the determinants affecting Capital Structure and measured uniqueness as ratio of Research & development to sales and the ratio of selling expenses to sales as they felt such firms are likely to spend more on R&D and may incur high selling expenses to promote their unique product. They found that uniqueness of a firm was negatively related to firms leverage. Indicating that firm with unique products find it difficult to borrow because of their specific use of capital and less tangible assets. Kakani (1999)[10] could find uniqueness as positively related significant factor to short term and Total Debt Ratios of a firms. Hence, it is assumed that uniqueness of a firm will affect its Capital Structure.

Following Titman & Wessel's (1988)[13], Bhaduri (2002)[11] and Song (2005)[7] the indicator selected to indicate uniqueness of a company is **i) Research & Development Expenditure to Sales Ratio.**

14. Cost of Borrowing:

According to Bhole & Mahakud (2004)[24], when the cost of borrowing increases, the dependence on borrowed funds is likely to decline and as a result leverage ratio is expected to have negative relationship with cost of borrowing. They found that their study confirmed their belief and cost of borrowing was one of the important Determinants of Capital Structure. Hence it is assumed that cost of borrowing may influence Capital Structure of firms in this study.

Following Bhole & Mahakud (2004)[24], The ratio selected to measure cost of borrowings is:

i) Total Interest to Total Debt (Long Term +Short Term Debt).

Year to year basis calculation of this ratio posed some measurement problems. It was noticed that, if some companies had zero debt or no interest payments in particular year, then the average Interest Payments / Total Debt ratio could not be calculated. Hence, for this variable, instead of calculating each year ratios, total interest paid by a company over eighteen year sample period is divided by the Total Debt taken over the sample period.

15. Industry Classification:

It is a commonly held belief that Debt Ratios vary significantly by industry. Ferri & Jones (1979, page 631)[41] believed that, "firms in the same industry class should experience similar amounts of business risk, because these firms produce similar products, face similar costs for material and skilled labour, and rely on similar technology." Hence it is believed that Debt Ratios may vary significantly by industry. Das & Roy (2005)[22] believed that the industry in which a firm operates is likely to have a significant effect on its Capital Structure and found out that Capital Structure of firms are systematically different across industry classes. Some industries typify being high leverage industries, while at the same time some industries are known to have low Debt Ratios.

Titman & Wessel's (1988)[13], Drobetz & Fix (2003)[23], Boateng (2004)[43], Gonenc (2005)[34], Akhtar (2005)[35], Gupta (2004)[19], Guha&Kar (2006)[33] had found out that Capital Structure of Indian firms varied across different industry classes. Frank & Goyal (2004)[30] had found out that firms that compete in industries in which the median firm has high leverage tend to have high leverage. Rao & Lukose (2002)[20], Guha & Kar (2006)[33] found out that industry classification had no effect on debt structures of firms.

One of the important objectives of this study is to examine the effect, if any, of membership of an industry on the Capital Structure of a firm.

As stated in 3.31 (Data source & sample), the total sample of 140 companies has been classified in 11 industries. The Capital Structure determinants of major industry groups are studied to find out whether the impact of Capital Structure determinants of FDI Companies in India differ due to affiliation to a particular industry group. The detail methodology for studying industry affect on Capital Structure has been stated in section 3.4.3.

16. Time Trends:

Some researchers have studied the time-series patterns of leverage. Bevan & Danbolt (2000)[9] using dummy variables tried to analyze whether the relationship between gearing and company characteristics change over time to have a better understanding of the dynamics in the Capital Structure determinants. Song (2005)[7] wanted to investigate whether leverage shifts over time, after controlling for the other observable determinants, used time dummies to observe time specific effects. They found that the time dummies were significant and the coefficients were negative reflecting a decrease in Debt Ratios over time. Akhtar (2005)[35] investigated effect of time variation in leverage as well as investigated whether Capital Structure determinants are time sensitive. Akhtar (2005)[35] wanted to test whether the significance of each of the explanatory variables varies across years and for this individual yearly regressions were conducted. Hence one of the important objectives of this study is to analyze the time trends in Capital Structure of firms.

Several researchers have studied time variation effects on Capital Structure. Bevan & Danbolt (2000)[9] had analyzed the time-series dynamics in the determinants of the Capital Structure choice of listed UK companies by using annual dummy variables. Akhtar (2005)[34] tested the time effect on leverage as well as investigated whether Capital Structure determinants are time sensitive. This was done by conducting individual yearly regressions to show the variation in significance of explanatory variables over the years. In this study, time trends of selected Debt Ratios are studied and the detail methodology followed in analyzing the time trends in Debt Ratios is mentioned in Section 3.4.1.

In all, in this study, the impact of fourteen Determinants of Capital Structure will be studied with the help of thirty-four indicators. The definitions of all the indicators used for the determinants have been listed in Table 3.4. Table 3.4 lists the Determinants of Capital Structure along with the indicators and various abbreviations used for each indicator of the Determinants selected for the study.

Table 3.4

Definitions of Independent Variables- Determinants of Capital Structure

Sr. No	Determinants	Indicators	Abbreviation
1	Size	Natural Logarithm of Sales	Log of sales
		Natural Logarithm of Gross Total Fixed Assets	Log of GTFA
		Natural Logarithm of Total Net Assets	Log of TNA
2	Profitability	Profit Before Interest & Tax /Total Net assets	PBIT/TNA
		Profit Before Interest,Tax, Depreciation & Amortization /Total Gross Assets	PBITDA/TGA
		Profit Before Tax /Total Net Assets	PBT/TNA
		Profit Before Interest & Tax / Sales	PBIT/Sales
		Profit Before Interest & Tax / Capital Employed	PBIT/CE
3	Collateral	Net Fixed Assets/Total Net Assets	NFA/TNA
		Gross Fixed Assets /Total Gross Assets	GFA/TGA
		(Net Fixed Assets +Inventory +Accounts Receivable)/ Total Net Assets	(Nfa+Inv+AR)/TNA
		Land &Building /Total Gross Assets	L&B/TGA
		Plant & Equipment /Total Gross Assets	P&E/TGA
		Inventories/Total Net Assets	INV / TNA
4	Volatility	Standard Deviation of Profit Before Interest &Tax	SD of PBIT
		Standard Deviation of Percentage Change in Profit Before Interest &Tax	SD of % change in PBIT
		Standard Deviation of Profit Before Interest, Tax, Depreciation & Amortization / Total Gross Assets	SD of PBITDA/TGA
		Coefficient of Variation of Profit Before Interest & Tax	COV of PBIT
		Coefficient of Variation of Profit Before Interest & Tax/Capital employed	COV of PBIT to CE
		Coefficient of Variation of Profit Before Interest & Tax/Total Net Assets	COV of PBIT to TNA
5	Growth Rate	Compount Annual Growth Rate of Total Assets	CAGR of TNA
		Compount Annual Growth Rate of Sales	CAGR of Sales
6	Non-Debt Tax Shields	Depreciation /Total Gross Assets	Depr/TGA
		Depreciation+ Export Turnover /Total Gross Assets	Depr+ET/TGA
		Depreciation /Profit Before Interest, Tax, Depreciation& Amortization	Depr/PBITDA
7	Debt Service Capacity	Profit Before Interest, Tax& Depreciation/Interest payments	PBDIT/INT
8	Age	Age as on 31-03-2008	Age as on 31-03-2008
		Natural Logarithm of Age of firm	Log of age of firm
9	Dividend Payout	Equity Dividend /Profit After Tax	Equity Div/PAT
10	Liquidity	Current Assets /Current Liabilities	CA/CL
11	Net Exports	Net Exports /Sales	Net exp/Sales
12	Cost of Equity	Dividend Payment/ Share Capital+Reserves	DIV/SC
13	Uniqueness	Research & Development Expenditure / Sales .	R&D /Sales
14	Cost of Borrowing	Interest Payment/Total Debt	INT /DEBT

3.5.3 List of determinants which are not selected for the purpose study

1. Ownership Pattern: The ownership pattern of any company may be composed of different groups of equity shareholders. Different groups of equity shareholders may have conflicting interests which may affect the financing mix. Many researchers have tried to find out whether the equity holding pattern affects firm's Capital Structure. Huang & Song (2002)[21] had found out that ownership structure affects leverage. According to Singla & Mittal (1997)[44], "Due to the prevalence of mutually conflicting interest, financing mix decisions would tend to take place according to the degree of influence of each group being represented by its relative shareholdings." Rao & Lukose (2002)[20] found that ownership pattern was significant when leverage was measured in terms of market value.

In this study, this determinant cannot be incorporated as the sample used in the study will become biased towards one particular group of shareholders. The selected sample is composed of only those companies which have a single foreign promoter's share of more than 10% of a company's equity capital. The sample consists of only foreign direct investment companies in India hence this particular factor cannot be incorporated in the study.

2. Regulation: Kakani (1997)[10] had used this attribute to check whether regulated firms have more of longer maturity debt than non regulated firms. It was argued that managers of regulated firms(such as firms in power sector) have less discretion over future investment decisions than mangers of non-regulated firms and this reduction in managerial discretion reduces the adverse incentive effect of Long Term Debt. Thus it implied that regulated firms will have more Long Term Debt. This factor could not be incorporated in the study again due to the nature of our sample.

3. Corporate Strategy Kakani (1997)[10] indicated that diversified firms will have diversified cash flows which reduce the bankruptcy risk, provide better access to capital markets and cost savings when securing debt finance. Therefore, diversified firms are likely to have more debt. Kakani (1997)[10] found that diversification strategy was of no significance in deciding the leverage level of firms. Akhtar (2005)[35] had measured diversification as the number of subsidiaries operating in overseas countries and found out that greater the level of diversification, lower the leverage. This factor has not been incorporated in the study. Our sample set already consists of FDI Companies and measurement of diversification of business in our sample will be misleading. Hence this factor has not been incorporated in the study.

4. Accruals/Flexibility: Bhattacharyya & Banerjee (2001)[14] felt that firms with high internal accruals will have lower debt ratio. This was one of their variables to represent information cost factors. But they found out that an increase in disposable accruals over time does not imply reduction of Debt Ratios over time. Gupta (2004)[19] used flexibility as a variable to denote negative debt. According to Gupta (2004)[19], financial flexibility is referred to as the amount of cash that firms build up over time. The Pecking Order Theory suggests negative relationship between leverage and flexibility. Myers (1984)[40] had first used the term financial slack which means firms try to maintain and create financial slack in the form of reserve borrowing power. However, Gupta (2004)[19] could not confirm to Pecking Order Theory as their results suggested a positive relationship between Debt Ratios and flexibility. We have already incorporated one aspect of liquidity in the study; hence this factor might not be able to capture any substantial additional effect, hence not incorporated in the study.

5. Non-Fixed Assets: Bhattacharyya & Banerjee (2001)[14] used non-fixed assets as one of their variables to represent information cost factors. Non fixed assets represented the amount of total assets not available to serve as collateral to raise Long Term Debt. It was assumed that higher the non-fixed assets, lower would be the debt ratio. Their study confirmed this belief. This factor has not been incorporated in the study as we have already included tangibility or collateral which will capture exactly the opposite effect. Either of these factors can be included, but both these measures cannot be included in the study.

6. Intangibility: This explanatory variable was used as one of the proxies for Trade-off Theory by Manos & Green (2001)[31]. Basically it was supposed to increase the present value of financial distress costs thus negatively related to leverage. Manos & Green (2001)[31] measured intangibility as the ratio of R&D plus advertising expenditure to sales, which is also a proxy to measure uniqueness of a firm. Since uniqueness of a firm is included as an explanatory variable in this study, intangibility as a determinant of Capital Structure is not included in this study.

7. Stock Illiquidity: This variable was also included by Manos & Green (2001)[31] to represent agency cost of equity and was expected to have positive effect on leverage, the reason being, a highly traded stock is taken to indicate confidence on the part of investors that a firm is relatively free from agency costs of equity and hence can support more equity. Manos & Green (2001)[31] used a study period of one year and thus could measure the number of days the firms traded on the BSE in a year to calculate stock illiquidity. This measurement was not possible in our sample. Hence this factor not incorporated in the study.

8. Signaling: Bhaduri (2002)[11] used ratio of dividend payment to net operating income and affiliation to a business group as proxies to capture signaling effect. Since in this study, we are already incorporating dividend payout as a separate factor affecting the Capital Structure of a firm, we need not use this proxy.

9. Share price: Guha & Kar (2006)[68] argued that a firm's choice of opting for debt as a means of finance depends on its status in the stock exchange. They felt that share price of a firm may have positive effect on debt of a firm. They found that share price had little impact on Debt Ratios of firms. Since we have not incorporated any market based measures in the study, this factor was dropped.

10. Long term Borrowing: Guha & Kar (2006)[33] also used long term borrowings as explanatory variable because they thought that a firms borrowing pattern and time preference may influence its credit worthiness. They felt that firms with long term borrowings would have high leverage. But long-term borrowings is an integral part of various measures of leverage (dependent variable) in our study and hence could not be incorporated in this study.

3.5.4 Macroeconomic Factors Influencing the Capital Structure

Lee & Kwok (1988)[45] had examined the impact of international environmental variables affecting the MNC's overall Capital Structure. Rajan & Zingales (1995)[8] in their Capital Structure study of G7 countries had believed that apart from size or power of the banking sector, the tax code, bankruptcy laws, development of bond markets, and patterns of ownership of each country also might be an influential factor in deciding

Capital Structure. Jong *et.al* (2005)[15] held that there are many country specific factors that affect leverage indirectly through their impact on firm specific determinants. They found that variables like inflation rate, trade openness and legal environment had a significant influence on Capital Structure and stock market orientation and bond market development had an indirect impact on firms Capital Structure.

Booth *et.al* (2001)[26] had studied the impact of macroeconomic variables because their study was based on developing countries which had heterogeneous economic environment like different growth rates, inflation rates, different accounting practices, tax rates, investor protection and so on.

Mahmud *et.al* (2009)[46] examined the influence of macro-economic factors on Capital Structure of three Asian countries: Japan, Malaysia and Pakistan for the period from 1996 to 2005. The study used six measures of country's economic development and the macroeconomic variables representing the six measures were: - growth in GNP per capital, prime lending rate, financial liberalization, and efficiency of financial markets, creditor's rights & enforcement. It is found that firms in Japan and in Pakistan had high leverage ratios. The high gearing in Japan was in view of its developed market status, but for Pakistan, it was felt that the gearing was due to undeveloped capital market which forced firms to opt for bank loans as opposed to raising new equities. This study also revealed that per capita GNP growth for Japan and Malaysia was significantly related to Capital Structure of firms and higher economic growth tends led to use of more Long Term Debt. Financial liberalization provides major support in the development of Capital Structure and overall corporate sector in all the three countries.

Here in this study, the impact of macroeconomic factors are not incorporated in this study due to data limitation. Similarly, the effect of macroeconomic factors on Capital Structure can be better understood if a comparative study is undertaken between two or more different countries to study the effect of macroeconomic variables on Capital Structure of a firm. Hence macroeconomic variables impact on Capital Structure has not been included in this study

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CHAPTER- 4

TRENDS IN CAPITAL STRUCTURE OF FDI COMPANIES IN INDIA

CHAPTER CONTENTS

Chapter-4 Contents (Continued…..)

CHAPTER - 4

TRENDS IN CAPITAL STRUCTURE OF FDI COMPANIES IN INDIA

This chapter examines the Trends in Capital Structure of FDI Companies in India. All the Debt ratios mentioned in Chapter - 3, Section 3.5.1 are used to analyze the trends and direction of change in the Capital Structure practices of sample 140 companies over the period of the study (1990-91 to 2007-2008). To analyze the trends, mean, median, standard deviation and coefficient of variation of all the Debt ratios are calculated. Various Graphs and Bar diagrams have been used for graphic representation of trends in financing mix adopted by FDI Companies in India. The trends of the sample FDI Companies as well as Industry-wise trends have been examined. To understand time trends in Debt ratios, 'Method of Least Squares' is applied using 'Linear Trend Model' and 'Quadratic Trend Model'. Time trend analysis is conducted for the overall sample of 140 FDI Companies as well as for five major industries - Chemicals, Food, Machinery, Service and Transport industry. The chapter is divided into two major sections: In Section I, the methodology adopted is stated and the overall trends of Capital Structure of all the sample companies taken together are studied and in Section II, industry wise trends in Capital Structure are examined.

SECTION I

4.1 Methodology Adopted

The various Debt ratios employed to analyze the trends in the Capital Structure of FDI Companies in India are categorized as Short Term, Long Term and Total Debt Ratios. The Debt ratios selected for conducting trend analysis are:

Table 4.1 Debt ratios Selected for Trend Analysis

Short Term Debt ratios	Long Term Debt ratios	Total Debt Ratios
STBB + CPLTD/TA	LTBB / TA	TD / TA
STD / TA	LTD/TA	TL/TA
STD1 / TA	LTD / NW	TD / NW
TC & E / TA	LTD / (NW + LTD)	TD / (TD + NW)
STD / NW	LTD / STD1	TL/NW
STD1 / NW		

- Out of all the Debt ratios in Table 4.1, the Long Term Debt measure LTD / STD1 is employed to analyze the proportion of Long Term to Short Term Borrowings of a company. It is not actually a debt measure, but is a very good indicator of the profile of debt financing of the companies. This ratio is not considered in analyzing the time trends in Capital Structure.

- ***As a first step***, aggregate mean Debt ratios of all the 140 companies for the sample period (1990-91 to 2007-2008) are calculated (Table 4.2). Along with Mean Debt ratios, their Median, Standard Deviation (SD) and Coefficient of Variation (COV) are also calculated. Mean is sensitive to extreme values in a data set, while Median which is the middle value in an ordered array of data is relatively unaffected by extreme values, hence Median is also calculated. According to Levine *et.al* (2003, page 112)[1], "The standard deviation helps one to know how a set of data clusters or distributes around its mean." According to Gupta S.P (2005)[2], "the standard deviation measures the absolute dispersion, the greater the standard deviation, the greater will be the magnitude of the deviations of the values from their mean". Coefficient of variation (COV) is a relative measure of variation and is expressed as percentage. It measures the scatter in the data relative to mean. It is calculated as:

$$COV = \frac{SD}{\overline{X}} \times 100$$

Where SD is standard deviation and $\overline{X}$ is arithmetic mean of the sample.

- ***In the second step*** - Year wise average ratios of each debt measure (Table 4.2.1) for the sample of 140 companies for the period from 1990-91 to 2007-2008 are calculated to analyze the effect of time on Debt ratios. The year wise Debt ratios reveal change, if any, in the financing mix strategy adopted by the firms over the sample period. Trends reflected in composition of Owner's Funds are studied. This is done by comparing percentage share of Share Capital and reserves to Owner's Funds for each year in the study period. The composition of total sources of funds of 140 FDI Companies in India (Table 4.2.3) is examined. Financing Pattern of 140 FDI Companies in India - composition of Total Non–Equity liabilities (Table 4.2.4) is also examined. Retention Ratios of FDI Companies in India (Table 4.2.5) are calculated. Retention ratio is calculated as a proportion of: Average Retained Profits of overall sample of 140 FDI Companies divided by Average Profit after Tax of 140 FDI

Companies. Along with tabular presentation, Bar diagrams are also used to denote the aggregate mean Debt ratios and financing mix adopted by FDI Companies in India.

- ***In the third step*** - time trend analysis is carried out. To examine whether Debt ratios of FDI Companies in India exhibit a significant linear trend, the linear trend model (The Simple Linear Regression equation) is used. Various Debt ratios are regressed on time to examine the rate of change in ratio per year. However, in some Debt ratios, on observing the Durbin Watson - "D' statistic, the problem of first order autocorrelation is detected. This can be due to specification bias in the model, that is, the ratio actually follows the non-linear trend, rather than the linear trend. To take care of this, Quadratic model is also fitted. The detailed methodology followed is stated in Chapter-3, Section 3.4.1. Results of both the models – Linear Trend Model and Quadratic Trend Model are interpreted jointly.

- ***In the fourth step***, Industry-wise trends in Capital Structure are examined. The sample of 140 companies is classified into 11 industry groups (Table 3.2, Chapter-3). The number of sample companies in each industry group varies from maximum thirty-eight companies in Machinery industry to a minimum of one company in Mining industry. Mining industry which had a share of only one sample FDI Company is dropped from trend analysis. The same procedure as mentioned in the first, second and third step as mentioned above is followed to examine industry-wise trends in Capital Structure. For conducting time trends, five major industry groups are selected- Chemical Industry, Food Industry, Machinery Industry, Services industry and Transport Industry. The composition of total sources of funds, the composition of total Non–Equity Liabilities and Retention Ratios of various industries are not examined in studying industry-wise trends.

4.2 Overall Trends in Capital Structure of FDI Companies

The aggregate Debt ratios of 140 FDI Companies in Table 4.2 reveal that the sample companies have been relying on very low debt levels in their Capital Structure. The LTD/NW ratio, which is the most accepted measure of leverage, indicates that Long Term Debt funds contributed only 67% towards financing Capital Structure. Short Term Debt funds as indicated by STD1/NW were 1.32 times the Net worth, out of which Short Term Bank Borrowings and Commercial Paper were 0.34 times the Net worth which meant that almost 26% Short Term Debt funds were contributed by Short Term Bank Borrowings and commercial paper as indicated by STD/NW ratio. The TL/NW ratio indicated that Total Liabilities were 'two' times the Net-Worth out of which a major proportion – almost 66% of Total Liabilities were made up of Short Term Debt funds which meant that rest 34% were contributed by Long Term Debt funds.

Table 4.2

Aggregate Debt Ratios of 140 FDI Companies (1991-2008)

Sr. No	Debt ratio	Mean	Median	SD	COV
1	STBB + CPLTD / TA	0.11	0.08	0.09	87.64
2	STD / TA	0.09	0.07	0.07	82.52
3	STD1 / TA	0.39	0.38	0.15	37.19
4	TC & E / TA	0.24	0.22	0.11	47.42
5	STD / NW	0.34	0.21	0.45	132.65
6	STD1 / NW	1.32	0.95	1.20	90.33
7	LTBB / TA	0.03	0.02	0.04	146.76
8	LTD / TA	0.16	0.13	0.13	77.81
9	LTD / NW	0.67	0.40	0.80	118.55
10	LTD / (NW + LTD)	0.31	0.23	0.52	165.26
11	LTD / STD1	0.55	0.35	0.92	166.18
12	TD / TA	0.25	0.22	0.16	62.48
13	TL / TA	0.56	0.54	0.17	29.82
14	TD / NW	1.01	0.66	1.04	103.18
15	TD / (TD + NW)	0.38	0.32	0.36	96.59
16	TL / NW	2.00	1.52	1.69	84.63

The contribution of Debt Funds to capital employed as indicated by LTD/(NW+LTD) ratio was only 31%, the rest contribution being made by equity funds. This ratio also showed maximum variability in relation to mean as indicated by COV of 165.26%. Out of the Total Assets being financed, TL/TA ratio indicated that 56% contribution is being made by external funds as opposed to internal funds. Out of 56% financing of Total Assets, STD1/TA ratio indicated that 39% were being financed by short term funds comprising mainly Short Term Bank Borrowings, Current Liabilities and Provisions. Out of 39% of assets being financed by short term funds, a major 24% was being financed by Trade Credit and an equivalent, revealing that Trade Credit was an important mode of financing adopted by sample FDI Companies. Long Term Debt funds contributed only 16% towards financing of assets as shown by the ratio LTD/TA. Lowest variability in relation to mean was seen in case of TL/TA ratio, which meant that it was one of the most representative measure of Capital Structure for the sample of 140 companies.

From Table 4.2.1 and Figures 4.1.1, 4.1.2, 4.1.3 and 4.1.4, it can be observed that there has been a definite shift in preferences of financing mix adopted by sample companies. There has been a marked decline in preference of debt funds – all forms of debt, whether it is short term or Long Term Debt or Total Debt, all have shown a significant decline throughout the study period. From the Figure 4.1.4, it can be observed that these companies have shifted from debt as a source of funds to more and more equity funds. The contribution of equity funds in financing mix increased from 31% in the year 1991 to 51% in the year 2008. A major portion of debt funds seems to be financed out of Short Term Debt funds (Figure 4.1.4). It is observed that although there was a considerable decline in all the Debt ratios throughout the study period, the years 2003 and 2004 have shown a sudden spikes, especially in all the Debt ratios which are scaled down to Net worth. The spike is most noticeable in case of STD1/NW ratio. This might be due to temporary decline in profits, due to which, companies used more of short term creditors' funds to finance the business and thus the resultant increase in ratio. The Retention ratios (Table 4.2.5) also confirm this belief as they seem to decline in the years 2002 to 2004 and then start rising again.

In the initial stages of liberalization, all the Debt ratios were high and then gradually showed a marked decline throughout the study period. A marked increase can be seen in the share of Reserves & Surplus in equity funds in the recent years (Table 4.2.2). This is a result of high Retention ratios. High Retention ratios result in greater share of internal sources of funds in FDI Companies in India. Table 4.2.3 reveals that, internal funds in the form of Reserves & Surplus, is a major source of finance, followed by Current Liabilities and Provisions. Table 4.2.4 indicates the contribution of major sources of Total Liabilities (non-equity) and it can be observed that Current Liabilities appear to be a major source of finance among all debt sources. There is a marked preference for Short Term Bank Borrowings and especially for Trade Credit and Equivalents throughout the study period.

Figure 4.1
Mean Debt Ratios of 140 FDI Companies(1991-2008)

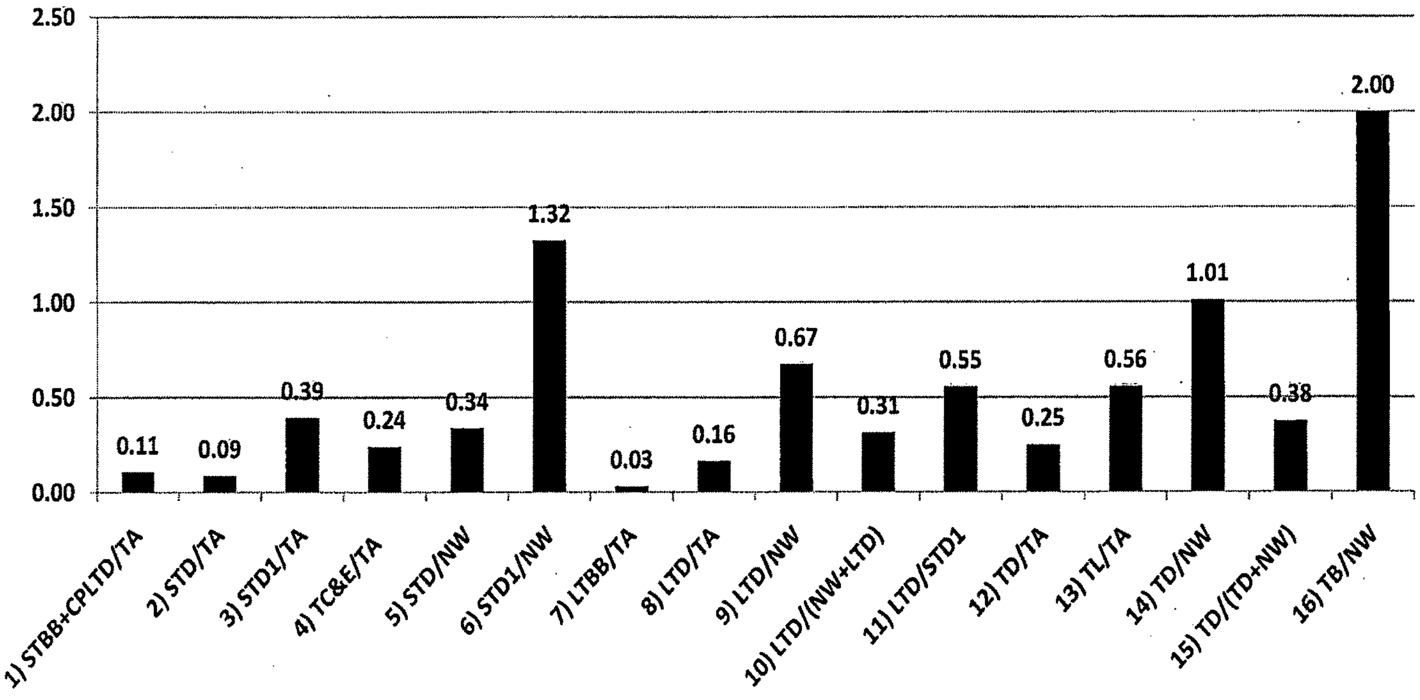


Table 4.2.1

Mean Debt Ratios by Year (140 FDI Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.13	0.13	0.14	0.11	0.12	0.13	0.12	0.11	0.10	0.10	0.10	0.09	0.08	0.07	0.08	0.09	0.10	0.08	0.11
2	STD/TA	0.12	0.11	0.12	0.10	0.10	0.11	0.10	0.09	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.05	0.09
3	STD1/TA	0.43	0.42	0.42	0.39	0.40	0.41	0.40	0.38	0.36	0.37	0.37	0.36	0.37	0.37	0.38	0.41	0.41	0.40	0.39
4	TC&E/TA	0.26	0.26	0.26	0.24	0.24	0.24	0.24	0.23	0.22	0.23	0.23	0.22	0.23	0.23	0.24	0.25	0.24	0.24	0.24
5	STD/NW	0.65	0.46	0.41	0.42	0.37	0.40	0.37	0.30	0.27	0.27	0.25	0.26	0.41	0.56	0.17	0.15	0.16	0.17	0.34
6	STD1/NW	2.72	1.73	1.53	1.48	1.33	1.39	1.25	1.28	1.01	1.04	0.94	1.00	1.37	1.97	1.02	0.94	0.89	0.96	1.32
7	LTBB/TA	0.03	0.03	0.02	0.01	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.03
8	LTD/TA	0.26	0.26	0.24	0.21	0.18	0.16	0.15	0.17	0.18	0.16	0.16	0.14	0.14	0.12	0.11	0.11	0.11	0.09	0.16
9	LTD/NW	1.80	1.07	1.02	0.89	0.71	0.69	0.54	0.94	0.53	0.47	0.45	0.49	0.64	0.45	0.45	0.35	0.34	0.31	0.67
10	LTD/(NW+LTD)	0.59	0.45	0.41	0.34	0.30	0.27	0.25	0.27	0.28	0.39	0.22	0.24	0.77	0.21	0.18	0.16	0.15	0.14	0.31
11	LTD/STD1	0.79	0.76	0.64	0.69	0.57	0.53	0.52	0.63	0.69	0.64	0.59	0.52	0.47	0.43	0.42	0.35	0.39	0.32	0.55
12	TD/TA	0.38	0.37	0.35	0.31	0.29	0.28	0.26	0.26	0.26	0.24	0.24	0.22	0.21	0.18	0.17	0.17	0.17	0.15	0.25
13	TL/TA	0.69	0.68	0.66	0.60	0.58	0.57	0.55	0.55	0.54	0.53	0.53	0.50	0.51	0.49	0.49	0.51	0.51	0.50	0.56
14	TD/NW	2.45	1.53	1.43	1.31	1.08	1.09	0.91	1.24	0.80	0.74	0.71	0.75	1.05	1.01	0.62	0.50	0.50	0.48	1.01
15	TD/(TD+NW)	0.54	0.53	0.50	0.43	0.40	0.39	0.36	0.36	0.35	0.33	0.37	0.26	0.41	0.28	0.40	0.18	0.22	0.45	0.38
16	TL/NW	4.51	2.80	2.56	2.37	2.04	2.08	1.79	2.22	1.53	1.51	1.39	1.49	2.01	2.41	1.47	1.29	1.22	1.27	2.00

Table-4.2.2 Composition of Owners Funds (140 FDI Companies in India)

Owners Funds	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean
Share Capital	35%	34%	31%	27%	22%	20%	18%	16%	16%	16%	16%	16%	14%	13%	12%	11%	9%	5%	18%
Reserves& Surplus	65%	66%	69%	73%	78%	80%	82%	84%	84%	84%	84%	84%	86%	87%	88%	89%	91%	95%	82%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 4.2.3 - Composition of Total Sources of Funds of 140 FDI Companies (1991-2008)

Source of Fund	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean
Share Capital	10%	10%	9%	9%	8%	7%	7%	6%	7%	7%	7%	7%	6%	6%	6%	6%	6%	4%	7%
Reserves& Surplus	19%	19%	21%	24%	26%	29%	30%	31%	31%	35%	34%	34%	36%	36%	39%	39%	41%	46%	32%
Debentures and Bonds	4%	7%	5%	6%	6%	4%	4%	6%	5%	4%	5%	5%	5%	5%	4%	1%	1%	0%	4%
Long Term Bank Borrowings	5%	3%	3%	2%	3%	3%	2%	3%	2%	3%	2%	3%	3%	4%	5%	4%	3%	3%	3%
Other Long Term Borrowings	16%	17%	18%	17%	16%	17%	17%	18%	17%	15%	17%	16%	15%	15%	12%	13%	13%	10%	16%
Short Term bank Borrowings+Com paper	9%	10%	10%	6%	7%	8%	8%	6%	6%	7%	7%	5%	5%	4%	4%	4%	4%	5%	6%
Current Liabilities	33%	30%	30%	33%	31%	29%	28%	26%	27%	23%	22%	23%	23%	22%	22%	24%	24%	23%	26%
Provisions	4%	4%	4%	3%	3%	3%	4%	4%	5%	6%	6%	7%	7%	8%	8%	9%	8%	9%	6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 4.2.4 Financing Pattern of FDI Companies in India (140 companies)

Composition of Total Liabilities(Non-equity)

Source of Finance	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean
Debentures and Bonds	6%	9%	8%	10%	9%	6%	6%	9%	8%	8%	8%	9%	9%	8%	7%	3%	1%	1%	7%
Long Term Bank Borrowings	7%	5%	4%	3%	4%	4%	3%	4%	4%	4%	4%	5%	6%	7%	9%	7%	7%	6%	5%
Other Long Term Borrowings	22%	24%	26%	24%	25%	26%	27%	28%	27%	27%	28%	27%	26%	26%	23%	24%	25%	20%	25%
Short Term bank Borrowings	12%	14%	14%	8%	10%	13%	12%	10%	9%	11%	11%	8%	8%	7%	7%	7%	7%	9%	10%
Commercial Paper	0%	0%	1%	1%	1%	0%	0%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Current Liabilities	47%	42%	43%	48%	47%	46%	45%	41%	44%	39%	38%	38%	39%	38%	40%	43%	45%	45%	43%
Provisions	6%	6%	5%	5%	5%	5%	6%	7%	8%	10%	9%	11%	13%	14%	15%	17%	16%	19%	10%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 4.2.5 Retention Ratios of FDI Companies in India (140 companies)

	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean
Retention Ratio	63%	63%	60%	62%	69%	66%	65%	62%	54%	48%	43%	38%	46%	43%	54%	51%	60%	59%	54%

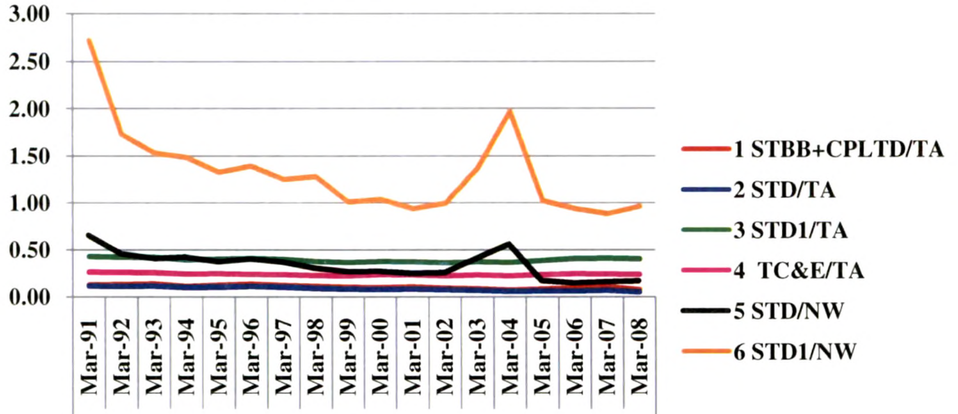


Figure 4.1.1 Short Term Debt Ratios by Year(140 FDI Companies)

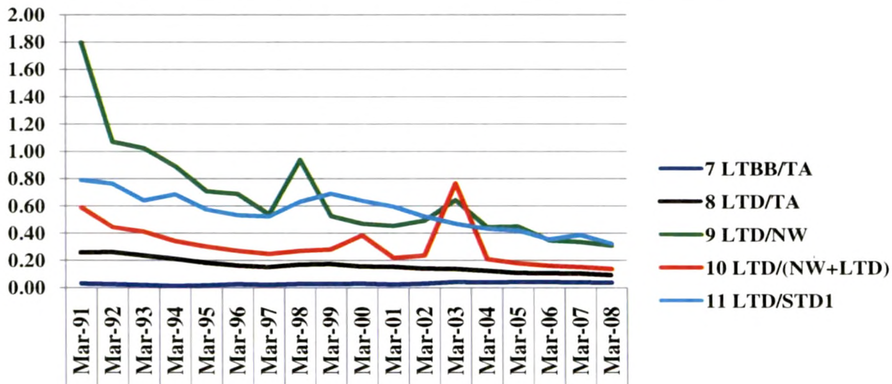


Figure 4.1.2 Long Term Debt Ratios by Year(140 FDI Companies)

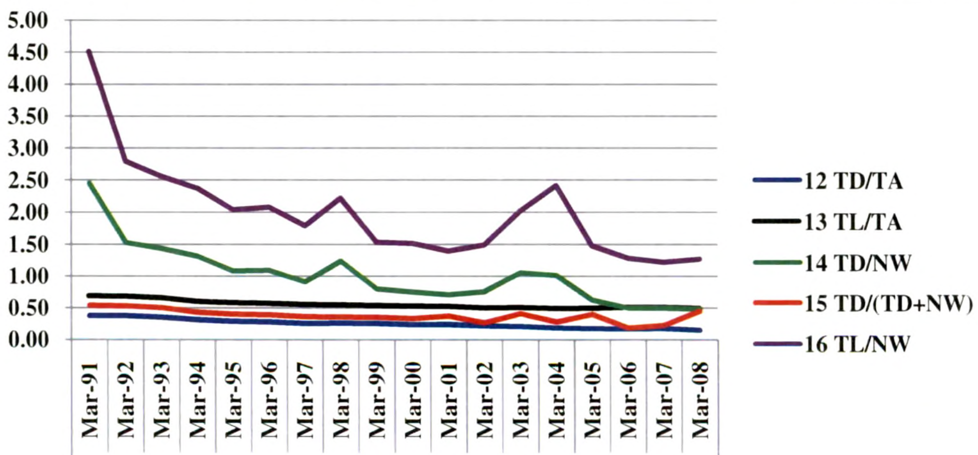
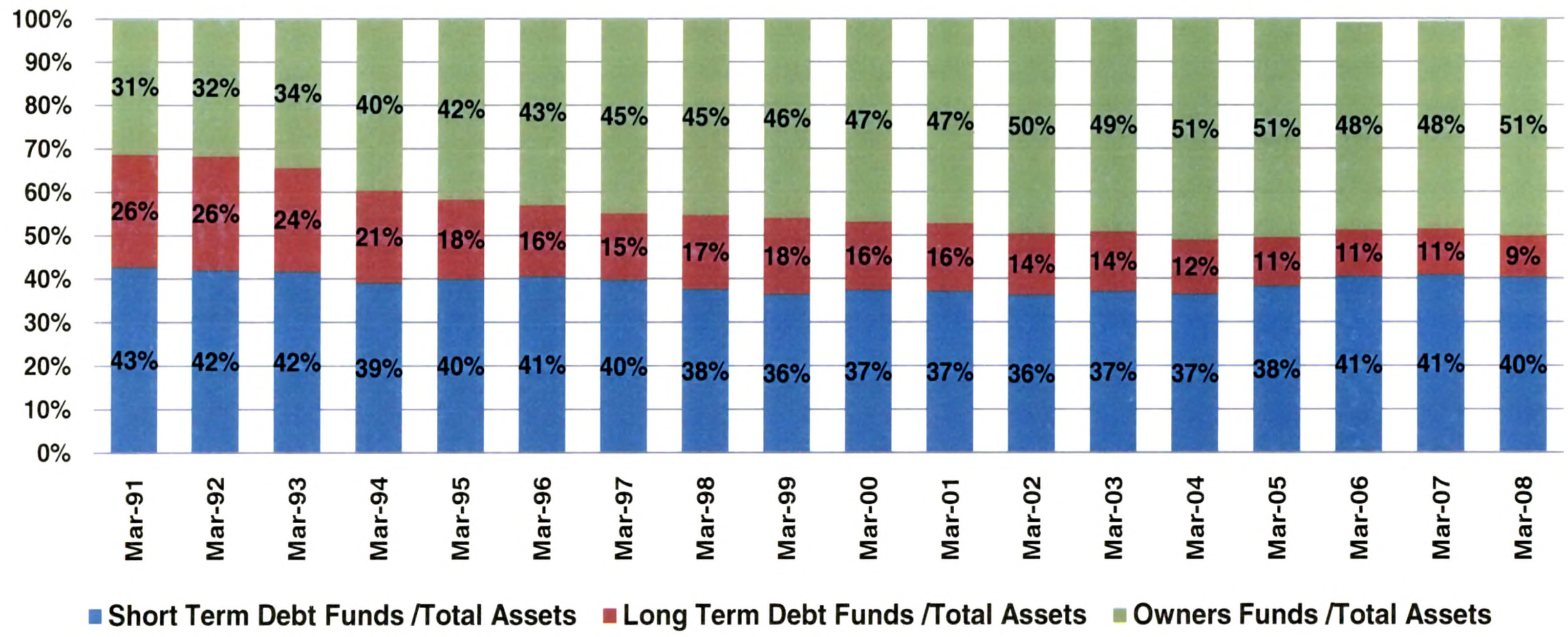


Figure 4.1.3 Total Debt Ratios by Year(140 FDI Companies)

Figure 4.1.4 - Financing Mix Adopted by 140 FDI Companies In India (1991-2008)



4.2.1 Time Trends in Capital Structure of FDI Companies

As a first step, Trends in Debt ratios for overall sample of 140 FDI Companies have been studied with the help of Linear Trend Model (Table 4.2.6).

Table 4.2.6

Linear Regression on Time Variable (140 FDI companies)

Debt Ratios	R square	Adjusted R square	Intercept	Slope	t-Statistic	p- value	F-Statistic	D Statistic
STBB+CPLTD/TA	0.757	0.742	0.136	-0.003	-7.059**	0.000	49.83	**1.338**
STD/TA	0.917	0.912	0.123	-0.004	-13.336**	0.000	177.85	**2.074**
STD1/TA	0.170	0.118	0.408	-0.002	-1.812	0.089	3.284	0.492
TC& E/TA	0.208	0.159	0.249	-0.001	-2.051	0.057	4.209	0.577
STD/NW	0.487	0.455	0.510	-0.018	-3.896**	0.001	15.17	**1.378**
STD1/NW	0.385	0.347	1.834	-0.054	-3.166**	0.006	10.025	**1.097**
LTBB/TA	0.513	0.483	0.018	0.001	4.107**	0.001	16.867	**1.322**
LTD/TA	0.881	0.874	0.249	-0.009	-10.889**	0.000	118.57	0.609
LTD/NW	0.668	0.647	1.207	0.056	-5.671**	0.000	32.16	**1.186**
LTD/(NW+LTD)	0.242	0.195	0.455	-0.015	-2.262*	0.038	5.116	**1.921**
TD/TA	0.962	0.959	0.374	-0.013	-20.084*	0.000	403.3	0.681
TL/TA	0.813	0.801	0.658	-0.011	-8.337**	0.001	69.51	0.381
TD/NW	0.683	0.663	1.717	-0.074	-5.872**	0.002	34.481	1.068
TD/(TD+NW)	0.456	0.422	0.494	-0.012	-3.663**	0.002	13.416	**1.988**
TL/NW	0.547	0.518	3.041	-0.110	-4.392**	0.000	19.29	0.980

* indicates significance at 5% level

** indicates significance at 1% level

Critical value of ' t'

Degrees of freedom	1%level of significance**	5%level of significance*
16	2.9208	2.1199

(Durbin-Watson statistic)- D statistic, K=1

N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
16	0.01	0.84	1.09
16	0.05	1.10	1.37

Where N= sample size, K = Number of independent variables

However, in some Debt ratios, the problem of first order autocorrelation is detected, which can be due to specification bias in the model, that is, the ratio actually follows the non-linear trend rather than linear trend. To take care of this, the 'Quadratic Trend Model' is also fitted (Section 3.4.1, Chapter-3). If the problem of autocorrelation still persisted, the further examination of the specification of the model and the estimation of the model could not be carried out, at it decreases the degrees of freedom, with the inclusion of more and more measures.

Table 4.2.7

Quadratic Regression on Time Variable (140 FDI companies)

Debt Ratios	R square	Adjusted R square	Intercept	Slopeß1	Slopeß2	t-Statistic ß1	t-Statistic ß2	F-Statistic	D Statistic
STBB+CPLTD/TA	0.777	0.747	0.144	-0.006	0.000	-2.816* (0.013)	1.163 (0.263)	26.142 (0.000)	1.470
STD/TA	0.922	0.911	0.126	-0.005	5.80E-05	-4.005** (0.001)	0.899 (0.383)	88.27 (0.000)	2.194
STD1/TA	0.735	0.699	0.451	-0.015	0.001	-6.220** (0.000)	5.647** (0.000)	20.753 (0.000)	**1.364**
TC& E/TA	0.771	0.741	0.273	-0.008	0.000	-6.779** (0.000)	6.078** (0.000)	25.300 (0.000)	**1.877**
STD/NW	0.500	0.434	0.552	-0.031	0.001	-1.525 (0.148)	0.640 (0.532)	7.514 (0.005)	1.399
STD1/NW	0.522	0.459	2.272	-0.185	0.007	-2.838* (0.012)	2.075 (0.056)	8.202 (0.004)	**1.308**
LTBB/TA	0.585	0.530	0.025	-0.001	9.87E-05	-0.549 (0.591)	0.591 (0.128)	10.576 (0.001)	1.517
LTD/TA	0.909	0.896	0.271	-0.016	0.000	-4.905** (0.000)	2.124* (0.051)	74.558 (0.000)	0.772
LTD/NW	0.787	0.759	1.532	-0.153	0.005	-4.438** (0.000)	2.900** (0.011)	27.731 (0.000)	**1.649**
LTD/(NW+LTD)	0.244	0.143	0.47	-0.019	0.000	-0.672 (0.512)	0.159 (0.876)	2.415 (0.123)	1.922
TD/TA	0.976	0.973	0.395	-0.019	0.000	-8.722** (0.000)	2.998** (0.009)	306.848 (0.000)	1.007
TL/TA	0.968	0.964	0.723	-0.030	0.001	-12.881** (0.000)	8.516** (0.000)	226.372 (0.000)	**1.670**
TD/NW	0.771	0.740	2.082	-0.184	0.006	-3.910** (0.001)	2.398* (0.030)	25.233 (0.000)	**1.327**
TD/(TD+NW)	0.585	0.530	0.585	-0.040	0.001	-3.056** (0.008)	2.158* (0.048)	10.570 (0.001)	**2.474**
TL/NW	0.686	0.645	3.802	-0.338	0.012	-3.721** (0.002)	2.586* (0.021)	16.418 (0.000)	**1.257**

Critical value of 't'

Degrees of freedom	1%level of significance**	5%level of significance*
15	2.9467	2.1315

Durbin-Watson statistic)- D statistic, K=2

N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
15	0.01	0.70	1.25
15	0.05	0.95	1.54

Where N= sample size, K = Number of independent variables

Note: Figures in parentheses are p-values

Results of the models, the Linear Trend Model (Table 4.2.6) and the Quadratic Trend Model (4.2.7) for the overall sample of 140 FDI Companies are interpreted jointly as follows:

- In some of the Debt ratios linear trend is observed. They are STBB+CPLTD/TA (-ve) , STD/TA (-ve), STD/NW(-ve), LTBB/TA(+ve) and LTD/(NW+LTD) (-ve).

- The ratios in which Quadratic trend model fitted the best were STD1/TA, TC&E/TA, STD1/NW, LTD/NW, TL/TA, TD/NW, TD/(TD+NW), TL/NW. The quadratic trend indicated that these Debt ratios were decreasing at an increasing rate.

- The Debt ratios LTD/TA and TD/TA decrease at an increasing rate, however the problem of autocorrelation persists as the 'D' statistic of LTD/TA ratio lies below the lower critical value and the D' statistic of TD/TA ratio lies in the inconclusive area.

SECTION II

4.3 Industry-Wise Trends of Capital Structure of FDI Companies:

4.3.1 Trends in Capital Structure of Food Industry

The aggregate Debt ratios in Table 4.3 indicate that Long Term Debt as a proportion to Net worth (LTD/NW) account for 62% and Long Term Debt contributes only 23% towards capital employed as indicated by LTD/NW+ LTD ratio. The ratio of total outsiders funds to Owner's Funds (TL/NW) reveal that outsiders funds are 2.02 times the Owner's Funds out if which Short Term Debt funds are 1.40 times which means 69% of Total Liabilities are made up of Short Term Debt funds.

Out of Total Liabilities financing 55% of Total Assets (TL/TA ratio), Trade Credits and Equivalents contribute almost 23% indicating that Trade Credit is an important source of finance for food industry. Long Term Debt contributes only 13% towards financing of assets as indicated by LTD/TA ratio. TL/TA ratio seemed to be the mostrepresentative measure of Capital Structure in Food industry and COV was minimum at 18.77%.

Table 4.3					
Aggregate Debt Ratios of Food Industry (11 FDI Companies, 1991-2008)					
Sr. No	**Debt Ratios**	**Mean**	**Median**	**SD**	**COV**
1	STBB+CPLTD/TA	0.11	0.12	0.05	41.64
2	STD/TA	0.10	0.10	0.05	47.82
3	STD1/TA	0.42	0.42	0.07	15.71
4	TC&E/TA	0.23	0.25	0.08	32.31
5	STD/NW	0.39	0.27	0.37	95.55
6	STD1/NW	1.40	1.14	0.94	66.72
7	LTBB/TA	0.04	0.02	0.06	123.42
8	LTD/TA	0.13	0.10	0.12	91.98
9	LTD/NW	0.62	0.27	0.83	134.14
10	LTD/(NW+LTD)	0.23	0.18	0.19	83.70
11	LTD/STD1	0.31	0.21	0.48	157.77
12	TD/TA	0.24	0.21	0.16	66.61
13	TL/TA	0.55	0.55	0.10	18.77
14	TD/NW	1.00	0.50	1.19	118.14
15	TD/(TD+NW)	0.33	0.30	0.18	54.13
16	TL/NW	2.02	1.41	1.61	79.70

The Table 4.3.1 and Figures 4.2.1, 4.2.2, 4.2.3 reveal that except for STD1/NW, LTD/NW, TD/NW and TL/NW ratio, all other Debt ratios were relatively stable throughout the time period. There was a significant decrease in preference of Long Term Debt funds as a source of finance. Even STD1/NW showed a marked decline, which meant that overall preference for Owner's Funds seemed to increase in Food industry, although Short Term Debt ratios had increased slightly in the year 2008.

Figure 4.2.4 represents the financing adopted by Food industry to finance its assets. It indicates that the contribution of Short Term Debt funds in financing mix of Food industry varies between 47% in the year 1991 to 45% in the year 2008. Contribution of Owner's Funds towards financing mix increases from 35% in the year 1991 to 45% in the year 2008. Contribution of Long Term Debt funds in financing of assets declines from 18% in 1991 to 10% in 1998. It can be concluded that FDI Companies from Food industry heavily depend on their internal funds and Short Term Debt Funds for their financing purposes.

Figure 4.2
Mean Debt Ratios of Food Industry (11 FDI Companies:1991-2008)

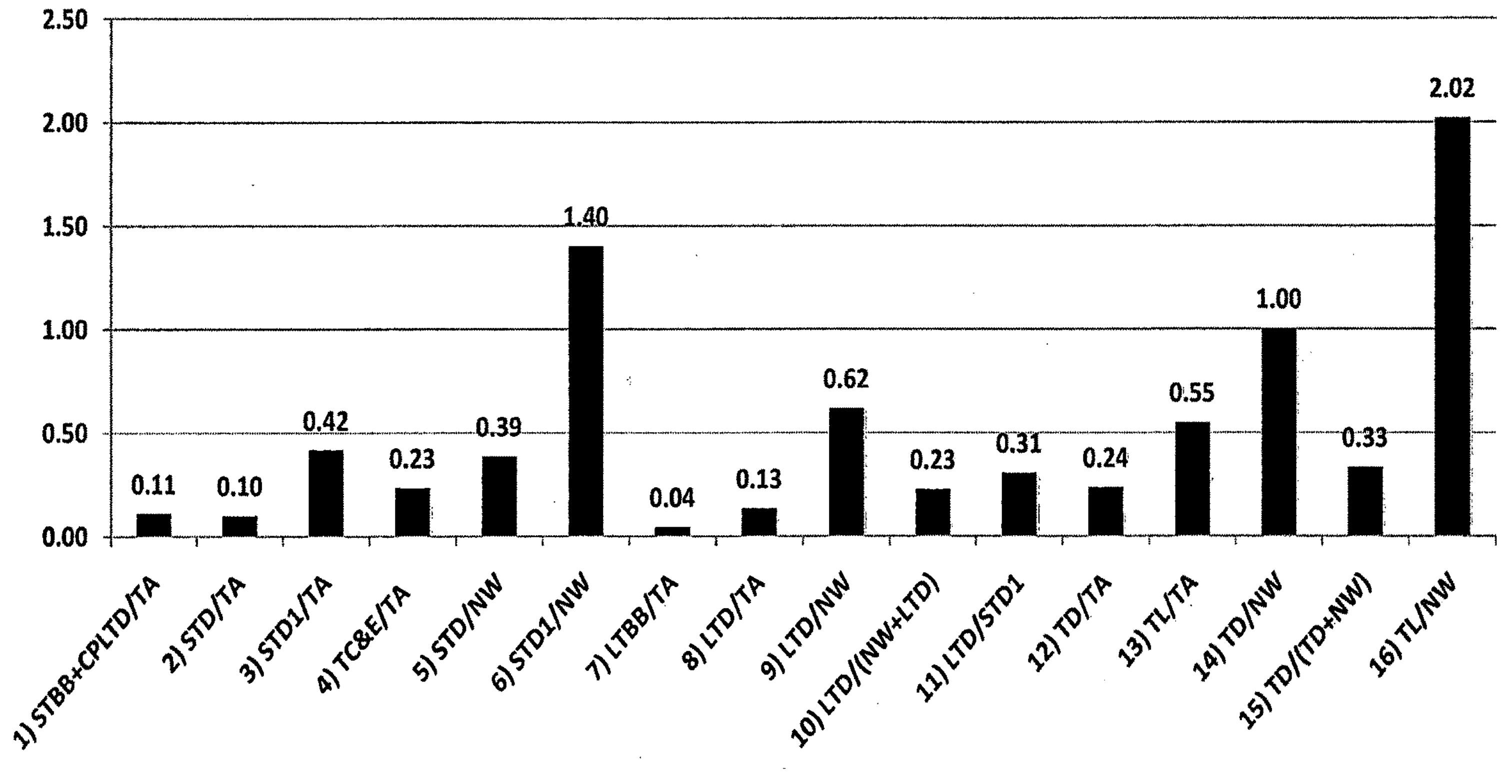


Table 4.3.1

	Mean Debt Ratios by Year (Food industry: 11 Companies)																		Mean
	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	1991-2008
1	STBB+CPLTD/TA	0.09	0.10	0.13	0.08	0.19	0.17	0.16	0.13	0.11	0.08	0.10	0.12	0.13	0.10	0.09	0.07	0.07	0.09	0.11
2	STD/TA	0.08	0.10	0.12	0.10	0.18	0.16	0.15	0.11	0.10	0.07	0.07	0.11	0.10	0.09	0.09	0.06	0.04	0.06	0.10
3	STD1/TA	0.47	0.47	0.43	0.40	0.44	0.43	0.45	0.39	0.38	0.38	0.39	0.38	0.41	0.41	0.43	0.39	0.40	0.45	0.42
4	TC&E/TA	0.29	0.29	0.24	0.23	0.21	0.22	0.24	0.21	0.20	0.23	0.24	0.21	0.24	0.24	0.26	0.22	0.21	0.22	0.23
5	STD/NW	0.65	0.46	0.35	0.26	0.60	0.55	0.46	0.37	0.41	0.31	0.32	0.38	0.50	0.44	0.40	0.19	0.11	0.20	0.39
6	STD1/NW	4.40	1.89	1.13	0.95	1.30	1.37	1.24	1.08	1.36	1.09	1.11	1.04	1.47	1.34	1.38	0.93	0.97	1.21	1.40
7	LTBB/TA	0.03	0.02	0.02	0.03	0.04	0.05	0.01	0.03	0.03	0.02	0.02	0.05	0.06	0.07	0.06	0.08	0.11	0.09	0.04
8	LTD/TA	0.18	0.17	0.16	0.14	0.15	0.16	0.13	0.15	0.16	0.15	0.16	0.12	0.10	0.09	0.07	0.10	0.11	0.10	0.13
9	LTD/NW	2.25	0.77	0.45	0.39	0.58	0.64	0.40	0.58	0.88	0.58	0.54	0.39	0.47	0.58	0.49	0.40	0.36	0.38	0.62
10	LTD/(NW+LTD)	0.33	0.31	0.24	0.23	0.27	0.29	0.22	0.24	0.28	0.26	0.26	0.21	0.18	0.16	0.13	0.15	0.15	0.16	0.23
11	LTD/STD1	0.37	0.32	0.34	0.33	0.30	0.36	0.36	0.36	0.39	0.44	0.41	0.30	0.23	0.15	0.13	0.22	0.31	0.21	0.31
12	TD/TA	0.27	0.27	0.28	0.24	0.33	0.33	0.28	0.26	0.26	0.23	0.23	0.23	0.20	0.19	0.16	0.16	0.15	0.16	0.24
13	TL/TA	0.65	0.64	0.59	0.54	0.59	0.60	0.57	0.54	0.54	0.53	0.54	0.50	0.51	0.50	0.50	0.49	0.51	0.55	0.55
14	TD/NW	2.90	1.22	0.80	0.65	1.17	1.19	0.86	0.96	1.29	0.89	0.86	0.77	0.96	1.02	0.88	0.59	0.47	0.58	1.00
15	TD/(TD+NW)	0.42	0.43	0.40	0.34	0.43	0.44	0.38	0.35	0.36	0.32	0.32	0.32	0.32	0.27	0.24	0.22	0.21	0.24	0.33
16	TL/NW	6.64	2.66	1.58	1.34	1.88	2.01	1.64	1.66	2.24	1.67	1.65	1.43	1.93	1.91	1.87	1.33	1.33	1.59	2.02

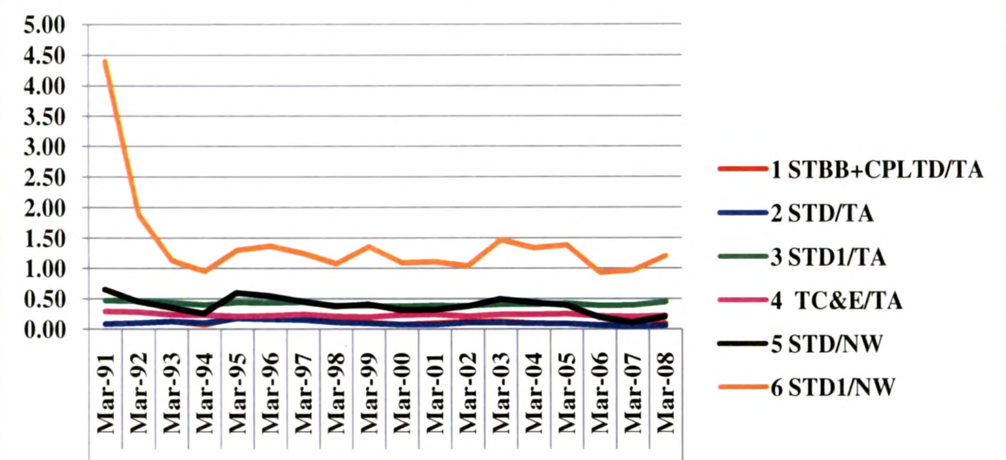


Figure 4.2.1 Short Term Debt Ratios by Year (Food Industry- 11 FDI Companies)

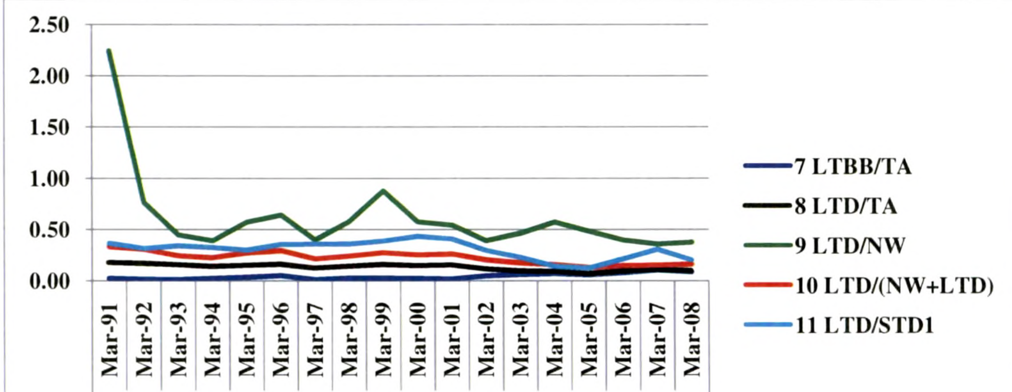


Figure 4.2.2 Long Term Debt Ratios by Year(Food Industry- 11 FDI Companies)

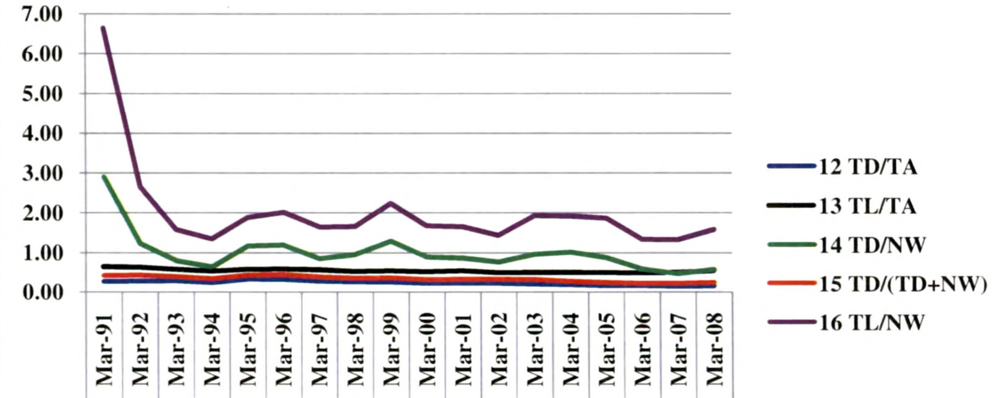
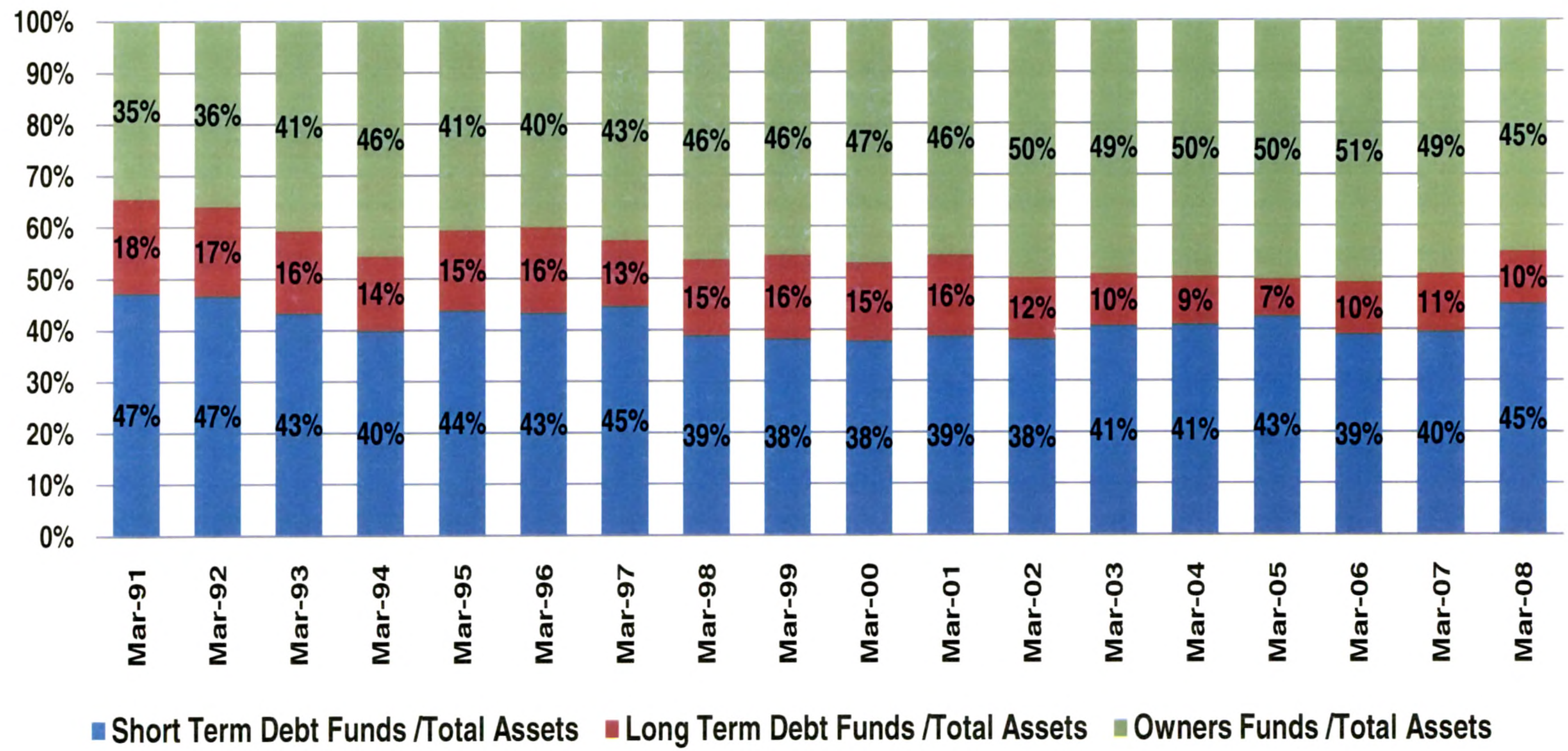


Figure 4.2.3 Total Debt Ratios by Year (Food Industry - 11 FDI Companies)

Figure 4.2.4 Financing Mix Adopted by Food Industry - 11 FDI Companies (1991-2008)



4.3.1.1 Time Trends in Capital Structure of Food Industry

Time Trends in Debt ratios for FDI Companies in Food Industry have been studied with the help of Linear Trend Model (Table 4.3.2) and Quadratic Model (Table 4.3.3).

Table 4.3.2

Linear Regression on Time Variable (Food Industry: 11 FDI companies)

Debt Ratios	R square	Adjusted R square	Intercept	Slope	t-Statistic	p- value	F-Statistic	D Statistic
STBB+CPLTD/TA	0.163	0.111	0.136	-0.003	-1.766	0.096	3.118	1.246
STD/TA	0.319	0.276	0.136	-0.004	-2.735*	0.015	7.480	0.941
STD1/TA	0.179	0.127	0.44	-0.002	-1.867	0.080	3.484	1.079
TC& E/TA	0.173	0.122	0.252	-0.002	-1.832	0.086	3.356	1.003
STD/NW	0.375	0.336	0.542	-0.016	-3.100**	0.007	9.608	**1.264**
STD1/NW	0.216	0.167	2.051	-0.068	-2.099	0.052	4.406	0.899
LTBB/TA	0.617	0.593	0.007	0.004	5.078**	0.000	25.790	1.024
LTD/TA	0.691	0.672	0.180	-0.005	-5.984**	0.000	35.813	1.059
LTD/NW	0.251	0.204	1.002	-0.040	-2.313*	0.034	5.350	1.075
LTD/(NW+LTD)	0.731	0.714	0.318	-0.010	-6.597**	0.000	43.527	**1.102**
TD/TA	0.725	0.708	0.320	-0.009	-6.495**	0.000	42.189	1.031
TL/TA	0.679	0.659	0.620	-0.007	-5.816**	0.000	33.821	1.034
TD/NW	0.331	0.289	1.543	-0.057	-2.813*	0.013	7.912	**1.156**
TD/(TD+NW)	0.846	0.837	0.457	-0.013	-9.383**	0.000	88.048	**1.498**
TL/NW	0.233	0.185	3.051	-0.109	-2.202**	0.043	4.848	0.952

* indicates significance at 5% level

** indicates significance at 1% level

Critical value of 't'

Degrees of freedom	1%level of significance**	5%level of significance*
16	2.9208	2.1199

(Durbin-Watson statistic)- D statistic, K=1

N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
16	0.01	0.84	1.09
16	0.05	1.10	1.37

Where N= sample size, K = Number of independent variables

Results of both the models, the Linear Trend Model (Table 4.3.2) and the Quadratic Trend Model (4.3.3) for the FDI Companies in Food industry are interpreted jointly as follows:

- On estimation of the Quadratic model, no trend in some of the Debt ratios is observed. These ratios are STBB+CPLTD/TA, STD/TA, LTBB/TA, LTD/NW and TD/TA.

Table 4.3.3									
Quadratic Regression on Time Variable (Food Industry: 11 FDI companies)									
Debt Ratios	R square	Adjusted R square	Intercept	Slopeß1	Slopeß2	t-Statistic ß1	t-Statistic ß2	F-Statistic	D Statistic
STBB+CPLTD/TA	0.340	0.252	0.099	0.009	-0.001	1.492 (0.157)	-2.003 (0.064)	3.859 (0.044)	1.553
STD/TA	0.481	0.412	0.098	0.007	-0.001	1.387 (0.186)	-2.175* (0.047)	6.944 (0.007)	1.176
STD1/TA	0.563	0.505	0.488	-0.017	0.001	-4.113** (0.001)	3.361** (0.002)	9.659 (0.002)	1.820
TC& E/TA	0.377	0.294	0.282	-0.011	0.000	-2.637* (0.019)	2.217* (0.042)	4.547 (0.029)	1.279
STD/NW	0.404	0.325	0.480	0.002	-0.001	0.103 (0.919)	-0.853 (0.407)	5.086 (0.021)	1.346
STD1/NW	0.430	0.354	2.981	-0.347	0.015	-2.870* (0.012)	2.374* (0.031)	5.659 (0.015)	1.047
LTBB/TA	0.795	0.768	0.037	-0.005	0.000	-1.917 (0.074)	3.606** (0.003)	29.071 (0.000)	1.866
LTD/TA	0.696	0.655	0.175	-0.003	-8.70E-05	-0.918 (0.373)	-0.474 (0.642)	17.151 (0.000)	1.085
LTD/NW	0.366	0.282	1.379	-0.153	0.006	-2.183* (0.045)	1.655 (0.119)	4.335 (0.033)	1.151
LTD/(NW+LTD)	0.741	0.706	0.302	-0.005	0.000	-0.805 (0.433)	-0.753 (0.463)	21.458 (0.000)	1.171
TD/TA	0.815	0.790	0.277	0.004	-0.001	0.815 (-0.428)	-2.703* (0.016)	33.059 (0.000)	1.510
TL/TA	0.811	0.786	0.665	-0.021	0.001	-4.881** (0.000)	3.239** (0.006)	32.186 (0.000)	1.521
TD/NW	0.384	0.302	1.854	-0.15	0.005	-0.1776 (0.096)	1.137 (0.273)	4.676 (0.026)	1.180
TD/(TD+NW)	0.870	0.852	0.427	-0.004	0.000	-0.736 (0.473)	-1.642 (0.121)	50.037 (0.000)	1.785
TL/NW	0.411	0.333	4.356	-0.500	0.021	-2.650* (0.018)	2.136* (0.050)	5.244 (0.019)	1.075

Critical value of 't'		
Degrees of freedom	1%level of significance**	5%level of significance*
15	2.9467	2.1315

Durbin-Watson statistic)- D statistic, K=2			
N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
15	0.01	0.70	1.25
15	0.05	0.95	1.54
Where N= sample size, K = Number of independent variables			
Note: Figures in parentheses are p-values			

- In one of the Debt ratio: LTD/TA (-ve), linear trend is observed; although the problem of autocorrelation is detected as the 'D' statistic lies in inconclusive area.
- In some of the Debt ratios of in Food industry, a linear trend is observed. They are STD/NW (-ve) , LTD/(NW+LTD) (-ve) , TD/NW (-ve) and TD/(TD+NW) (ve-).
- The ratios in which Quadratic trend model fitted the best were STD1/TA, TC&E/TA and TL/TA. The quadratic trend indicated that these Debt ratios were decreasing at an increasing rate.
- The Debt ratio STD1/NW, TL/NW decrease at an increasing rate; however the problem of autocorrelation persists as 'D' statistic lies in the inconclusive area.

4.3.2 Trends in Capital Structure of Chemicals Industry

The aggregate Debt ratios in Table 4.4 indicate that Chemicals Industry is resorting to low debt levels in their Capital Structure. Long Term Debt as a proportion to Net worth (LTD/NW) account for only 48% as opposed to 62% in case of Food industry. Long Term Debt contributes only 23% towards capital employed as indicated by LTD/NW+ LTD ratio. The ratio of total outsiders funds to Owner's Funds (TL/NW) reveal that outsider's funds are only 1.55 times the owner's funds, which are very low as compared to other industries like Machinery or Food industry. Out of the Total Liabilities which are 1.55 times the owner's funds, Short Term Debt funds are 1.06 times (STD1/NW) which means 68% of Total Liabilities are made up of Short Term Debt funds.

52% of Total Assets are financed by external funds as indicated by TL/TA ratio. Out of these external funds which are financing 52% of Total Assets, Trade Credits & Equivalents contribute almost 23% indicating that Trade Credit is an important source of finance for Chemicals industry. Long Term Debt contributes only 14% towards financing of assets as indicated by LTD/TA ratio. TL/TA ratio was the most representative measure of Capital Structure even in case of Chemicals Industry as the COV was 25.53%, followed by STD1/TA which had a COV of 28.67%.

Table 4.4					
Aggregate Debt Ratios of Chemical Industry (37 FDI Companies, 1991-2008)					
Sr. No	**Debt ratio**	**Mean**	**Median**	**SD**	**COV**
1	STBB+CPLTD/TA	0.09	0.08	0.07	69.83
2	STD/TA	0.08	0.07	0.05	66.29
3	STD1/TA	0.37	0.38	0.11	28.67
4	TC&E/TA	0.23	0.22	0.09	41.42
5	STD/NW	0.26	0.21	0.25	94.69
6	STD1/NW	1.06	0.91	0.58	54.77
7	LTBB/TA	0.02	0.01	0.03	123.55
8	LTD/TA	0.14	0.11	0.12	82.41
9	LTD/NW	0.48	0.34	0.58	119.57
10	LTD/(NW+LTD)	0.23	0.21	0.17	73.18
11	LTD/STD1	0.62	0.35	0.59	96.12
12	TD/TA	0.22	0.19	0.14	64.44
13	TL/TA	0.52	0.50	0.13	25.53
14	TD/NW	0.74	0.59	0.76	102.67
15	TD/(TD+NW)	0.31	0.28	0.18	59.01
16	TL/NW	1.55	1.31	1.01	65.55

The Table 4.4.1 and the Figures 4.3.1, 4.3.2, 4.3.3 reveal that that there are wide fluctuations during 1991-1993 where there is a sudden fall in Debt ratios followed by immediate rise. This has mainly resulted due to existence of negative Net worth in Acrysil Ltd and Venlon Enterprises Ltd during the year 1992. Later in 1993, there was general increase in debt levels along with positive Net worth for both these companies; hence again noticeable spike was seen in the year 1993.From the year 1994 onwards, there was a gradual decline in all the Debt ratios, indicating that overall preference for debt in the Capital Structure of Chemical industry has declined over the period. The proportion of LTD/STD1 (Figure 4.3.2) seemed to increase temporarily in the year 1999 but overall the ratio showed a declining trend. Figure 4.3.4 indicated that Chemical industry's preference towards owners fund as source of financing the assets was showing an increasing trend from 33% contribution towards financing assets in the year 1991 to 56% contribution in the year 2008. As opposed to owner's funds, preference for Long Term Debt as a source of finance had decreased from 23% in the year 1991 to 7% in the year 2008. The proportion of Short Term Debt funds in the financing mix more or less remained stable throughout the time period in case of Chemicals Industry.

Figure 4.3
Mean Debt Ratios of Chemicals Industry (37 companies: 1991-2008)

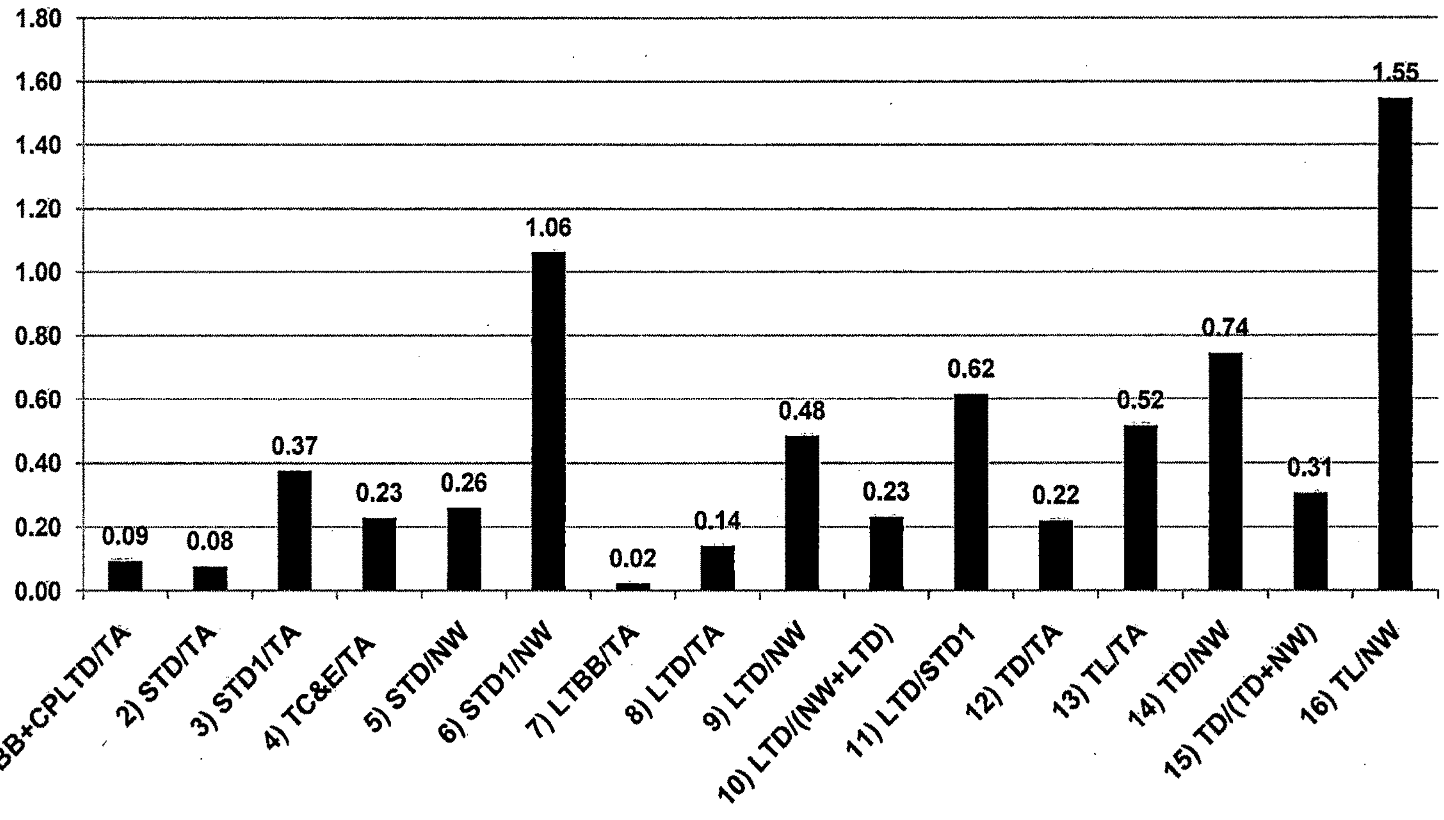


Table 4.4.1

Mean Debt Ratios by Year (Chemical Industry : 37 FDI Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.16	0.16	0.14	0.12	0.13	0.14	0.12	0.09	0.08	0.07	0.08	0.07	0.07	0.05	0.05	0.05	0.05	0.06	0.09
2	STD/TA	0.14	0.13	0.12	0.10	0.11	0.11	0.10	0.07	0.06	0.06	0.07	0.06	0.05	0.04	0.04	0.04	0.04	0.04	0.08
3	STD1/TA	0.44	0.42	0.41	0.41	0.41	0.41	0.40	0.37	0.36	0.36	0.35	0.33	0.34	0.33	0.34	0.35	0.35	0.37	0.37
4	TC&E/TA	0.25	0.24	0.25	0.26	0.26	0.25	0.25	0.23	0.24	0.23	0.22	0.21	0.22	0.20	0.21	0.20	0.19	0.20	0.23
5	STD/NW	0.80	0.49	0.49	0.31	0.33	0.33	0.31	0.20	0.17	0.16	0.19	0.17	0.16	0.10	0.10	0.12	0.12	0.10	0.26
6	STD1/NW	2.06	1.36	1.77	1.26	1.24	1.13	1.14	0.92	0.93	0.86	0.83	0.81	0.83	0.77	0.76	0.77	0.81	0.89	1.06
7	LTBB/TA	0.03	0.02	0.02	0.01	0.02	0.04	0.03	0.03	0.03	0.03	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02
8	LTD/TA	0.23	0.24	0.23	0.19	0.17	0.16	0.15	0.16	0.15	0.13	0.13	0.11	0.09	0.10	0.08	0.08	0.08	0.07	0.14
9	LTD/NW	1.46	0.24	1.33	0.67	0.58	0.54	0.48	0.45	0.43	0.38	0.34	0.30	0.25	0.30	0.27	0.25	0.25	0.21	0.48
10	LTD/(NW+LTD)	0.42	0.41	0.38	0.31	0.28	0.27	0.25	0.25	0.24	0.21	0.19	0.17	0.14	0.16	0.14	0.12	0.13	0.11	0.23
11	LTD/STD1	0.72	0.60	0.66	0.51	0.46	0.51	0.54	0.88	0.99	0.84	0.76	0.68	0.57	0.50	0.46	0.47	0.55	0.39	0.62
12	TD/TA	0.37	0.37	0.34	0.29	0.28	0.28	0.25	0.24	0.22	0.20	0.20	0.16	0.14	0.14	0.12	0.12	0.12	0.11	0.22
13	TL/TA	0.67	0.66	0.64	0.59	0.58	0.57	0.55	0.53	0.52	0.50	0.48	0.44	0.43	0.43	0.42	0.42	0.43	0.44	0.52
14	TD/NW	2.27	0.73	1.82	0.98	0.91	0.87	0.79	0.65	0.60	0.54	0.53	0.47	0.41	0.41	0.36	0.37	0.37	0.31	0.74
15	TD/(TD+NW)	0.53	0.51	0.49	0.41	0.39	0.38	0.35	0.32	0.30	0.26	0.27	0.23	0.20	0.20	0.18	0.17	0.17	0.15	0.31
16	TL/NW	3.52	1.59	3.10	1.93	1.83	1.67	1.62	1.37	1.36	1.24	1.17	1.11	1.08	1.07	1.02	1.02	1.06	1.10	1.55

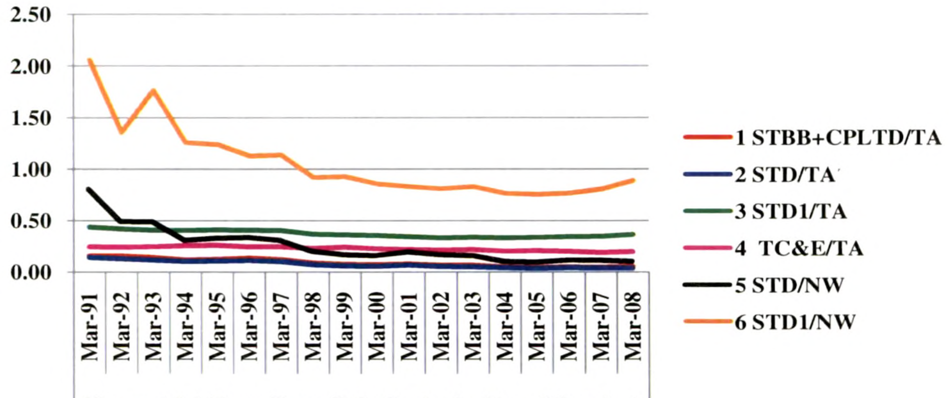


Figure 4.3.1 Short Term Debt Ratios by Year(Chemical industry- 38 FDI Companies)

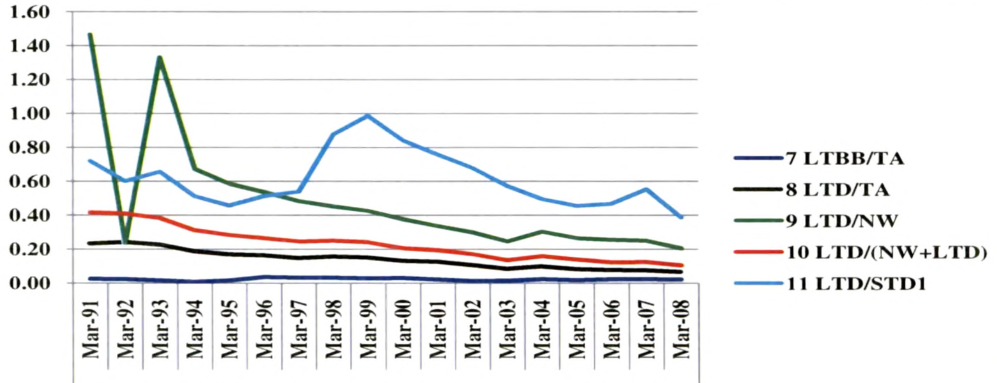


Figure 4.3.2 Long Term Debt Ratios by Year(Chemical Industry- 37 FDI Companies)

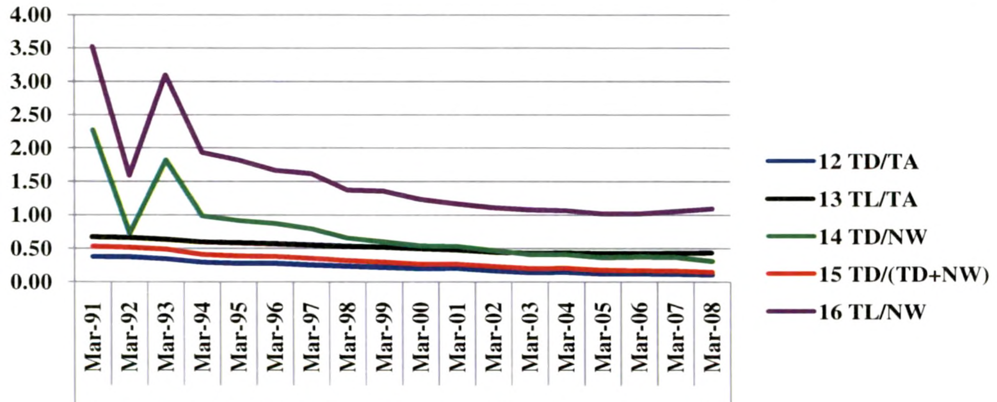
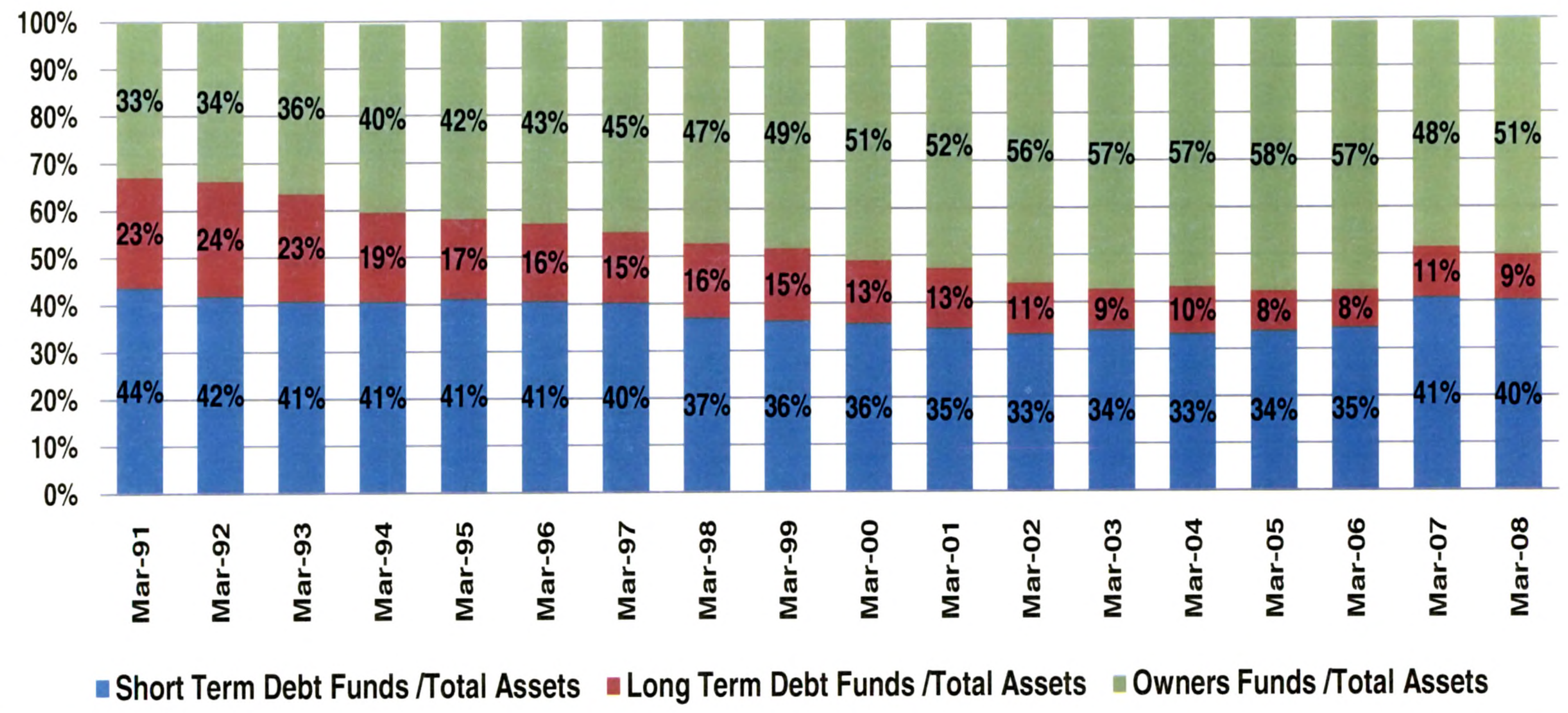


Figure 4.3.3 Total Debt Ratios by Year (Chemical Industry - 37 FDI Companies)

Figure 4.3.4 - Financing Mix Adopted by Chemical Industry - 37 FDI Companies (1991-2008)



4.3.2.1 Time Trends in Capital Structure of Chemicals Industry

Time Trends in Debt ratios for FDI Companies in Chemicals Industry have been studied with the help of Linear Trend Model (Table 4.4.2) and Quadratic Model (Table 4.4.3).

Table 4.4.2

Linear Regression on Time Variable (Chemical Industry: 37 FDI companies)

Debt Ratios	R square	Adjusted R square	Intercept	Slope	t-Statistic	p- value	F-Statistic	D Statistic
STBB+CPLTD/TA	0.893	0.887	0.160	-0.007	-11.581**	0.000	134.1	0.928
STD/TA	0.911	0.905	0.135	-0.006	-12.765**	0.000	162.933	0.884
STD1/TA	0.731	0.715	0.428	-0.006	-6.600**	0.000	43.555	0.477
TC& E/TA	0.837	0.827	0.265	-0.004	-.9.081**	0.000	82.458	**1.369**
STD/NW	0.735	0.719	0.538	-0.029	-6.666**	0.000	44.431	0.802
STD1/NW	0.686	0.666	1.602	-0.057	-5.912**	0.000	34.957	**1.289**
LTBB/TA	0.074	0.016	0.260	0.000	-1.133	0.274	1.284	1.064
LTD/TA	0.946	0.942	0.237	-0.010	-16.674**	0.000	278.022	1.036
LTD/NW	0.491	0.459	0.930	-0.047	-3.929**	0.001	15.434	**2.779**
LTD/(NW+LTD)	0.935	0.931	0.402	-0.018	-15.199**	0.000	230.999	0.564
TD/TA	0.967	0.964	0.374	-0.016	-21.498**	0.000	462.16	0.868
TL/TA	0.928	0.924	0.665	-0.016	-14.402**	0.000	207.42	0.423
TD/NW	0.614	0.590	1.471	-0.077	-5.044**	0.000	25.444	2.309
TD/(TD+NW)	0.961	0.959	0.522	-0.023	-19.940**	0.000	397.617	0.647
TL/NW	0.613	0.589	2.532	-0.104	-5.031**	0.000	25.315	**2.187**

* indicates significance at 5% level

** indicates significance at 1% level

Critical value of 't'

Degrees of freedom	1%level of significance**	5%level of significance*
16	2.9208	2.1199

(Durbin-Watson statistic)- D statistic, K=1

N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
16	0.01	0.84	1.09
16	0.05	1.10	1.37

Where N= sample size, K = Number of independent variables

Results of both the models, the Linear Trend Model (Table 4.4.2) and the Quadratic Trend Model (4.4.3) for the FDI Companies in Chemical industry are interpreted jointly as follows:

- On estimation of the Quadratic model, no trend is observed in LTBB/TA ratio.

Table 4.4.3									
Quadratic Regression on Time Variable (Chemical Industry: 37 FDI companies)									
Debt Ratios	R square	Adjusted R square	Intercept	Slopeß1	Slopeß2	t-Statistic ß1	t-Statistic ß2	F-Statistic	D Statistic
STBB+CPLTD/TA	0.931	0.922	0.18	-0.013	0.000	-6.064** (0.000)	2.854* (0.012)	101.08 (0.000)	**1.321**
STD/TA	0.947	0.94	0.152	-0.011	0.000	-6.880** (0.000)	3.189** (0.006)	133.235 (0.000)	**1.355**
STD1/TA	0.872	0.855	0.462	-0.016	0.001	-6.133** (0.000)	4.061** (0.001)	51.112 (0.000)	0.742
TC& E/TA	0.866	0.848	0.256	-0.001	0.000	-0.546 (0.593)	-1.793 (0.093)	48.547 (0.000)	1.665
STD/NW	0.898	0.884	0.729	-0.087	0.003	-7.198** (0.000)	4.883** (0.000)	65.848 (0.000)	**1.622**
STD1/NW	0.893	0.879	2.029	-0.185	0.007	-7.551** (0.000)	5.387** (0.000)	62.596 (0.000)	**3.266**
LTBB/TA	0.097	-0.024	0.023	0.001	-4.90E-05	0.330 (0.746)	-0.609 (0.551)	0.802 (0.467)	1.104
LTD/TA	0.965	0.960	0.256	-0.016	0.000	-7.486** (0.000)	2.839* (0.012)	204.353 (0.000)	**1.576**
LTD/NW	0.573	0.516	1.192	-0.125	0.004	-2.628* (0.019)	1.695 (0.111)	10.058 (0.002)	3.229
LTD/(NW+LTD)	0.978	0.975	0.454	-0.034	0.001	-11.209** (0.000)	5.398** (0.000)	333.216 (0.000)	**1.431**
TD/TA	0.985	0.983	0.405	-0.026	0.000	-11.691** (0.000)	4.386** (0.001)	504.116 (0.000)	**1.810**
TL/TA	0.976	0.973	0.714	-0.03	0.001	-11.066** (0.000)	5.500** (0.000)	308.45 (0.000)	0.895
TD/NW	0.729	0.693	1.925	-0.231	0.007	-3.831** (0.002)	2.526* (0.023)	20.187 (0.000)	**3.132**
TD/(TD+NW)	0.991	0.990	0.577	-0.039	0.001	-16.391** (0.000)	7.084** (0.000)	835.067 (0.000)	**2.428**
TL/NW	0.756	0.724	3.219	-0.31	0.011	-34.672 (0.001)	2.968** (0.010)	23.242 (0.000)	**3.276**

Critical value of 't'		
Degrees of freedom	1%level of significance**	5%level of significance*
15	2.9467	2.1315

Durbin-Watson statistic)- D statistic, K=2			
N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
15	0.01	0.70	1.25
15	0.05	0.95	1.54
Where N= sample size, K = Number of independent variables			
Note: Figures in parentheses are p-values			

- In some of the Debt ratios of in Chemical industry, a linear trend is observed. They are TC&E/TA (-ve) and LTD/NW (-ve).

- The ratios in which Quadratic trend model fitted the best were STBB+CPLTD/TA, STD/TA, STD/NW, STD1/NW, LTD/TA, LTD/(NW+LTD), TD/TA, TD/NW, TD/(TD+NW) and TL/NW. The quadratic trend indicated that these Debt ratios were decreasing at an increasing rate.

- The Debt ratios STD1/TA and TL/TA ratio decrease at an increasing rate, however the problem of autocorrelation persists as 'D' statistic of both these ratios lie below the critical value.

4.3.3 Trends in Capital Structure of Machinery Industry

The aggregate Debt ratios in Table 4.5 indicate that Machinery Industry is also resorting to low debt levels in their Capital Structure. Long Term Debt as a proportion to Net worth (LTD/NW) account for only 63%. Long Term Debt contributes only 39% towards capital employed as indicated by LTD/NW+LTD ratio.

Table 4.5

Aggregate Debt Ratios of Machinery Industry (38 FDI Companies, 1991-2008)

Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.11	0.07	0.14	122.72
2	STD/TA	0.09	0.06	0.08	99.18
3	STD1/TA	0.44	0.43	0.17	37.74
4	TC&E/TA	0.29	0.27	0.13	45.78
5	STD/NW	0.30	0.18	0.29	97.84
6	STD1/NW	1.51	1.00	1.22	80.74
7	LTBB/TA	0.01	0.01	0.01	90.23
8	LTD/TA	0.13	0.11	0.09	70.81
9	LTD/NW	0.63	0.29	0.92	145.15
10	LTD/(NW+LTD)	0.39	0.18	0.94	237.41
11	LTD/STD1	0.38	0.31	0.26	70.32
12	TD/TA	0.22	0.18	0.15	67.18
13	TL/TA	0.58	0.56	0.21	35.78
14	TD/NW	0.93	0.50	1.09	117.55
15	TD/(TD+NW)	0.35	0.25	0.37	105.17
16	TL/NW	2.14	1.61	2.04	95.36

The ratio of total outsiders funds to Owner's Funds (TL/NW) reveal that outsider's funds are 2.14 times the Owner's Funds, which are little higher as compared to Chemicals industry. Out of the Total Liabilities which are 2.14 times the owner's funds, Short Term Debt funds are 1.37 times (STD1/NW) which means 64% of Total Liabilities are made up of Short Term Debt funds.

58% of Total Assets are financed by external funds as indicated by TL/TA ratio. Out of these external funds which are financing 58% of Total Assets, Trade Credits and Equivalents contribute almost 29% indicating that Trade Credit is an important source of finance even for Machinery industry. Long Term Debt contributes only 13% towards financing of assets as indicated by LTD/TA ratio. In Machinery industry also TL/TA ratio was the most representative measure of leverage as COV was 35.78%, followed by STD1/TA which had COV of 37.74%.

The Table 4.5.1 and the Figures 4.4.1, 4.4.2 and 4.4.3 reveal that there were fluctuations during the year 1997-1998 with noticeable spikes in case of all the three categories of ratios –Short Term, Long Term and Total Debt Ratios which are scaled down to Net worth. LTD/(NW+LTD) ratio again shows a similar spike in the year 2003. These spikes were mainly attributable to one company- Schlafhorst Engineering (India) Ltd. which had a very high Debt ratio in one year followed by very low ratios in subsequent years. Figure 4.4.4 indicates that Machinery industry's preference towards owners fund as source of financing has generally increased from 30% to 46% during the period from 1991 to 2008. The preference for Long Term Debt as a source of finance had decreased considerably from 23% in the year 1991 to 5% in the year 2008. The proportion of Short Term Debt funds in the financing mix more or less remained stable throughout the time period except that in recent years it is showing an increased preference.

Figure 4.4

Mean Debt Ratios of Machinery Industry (38 FDI Companies:1991-2008)

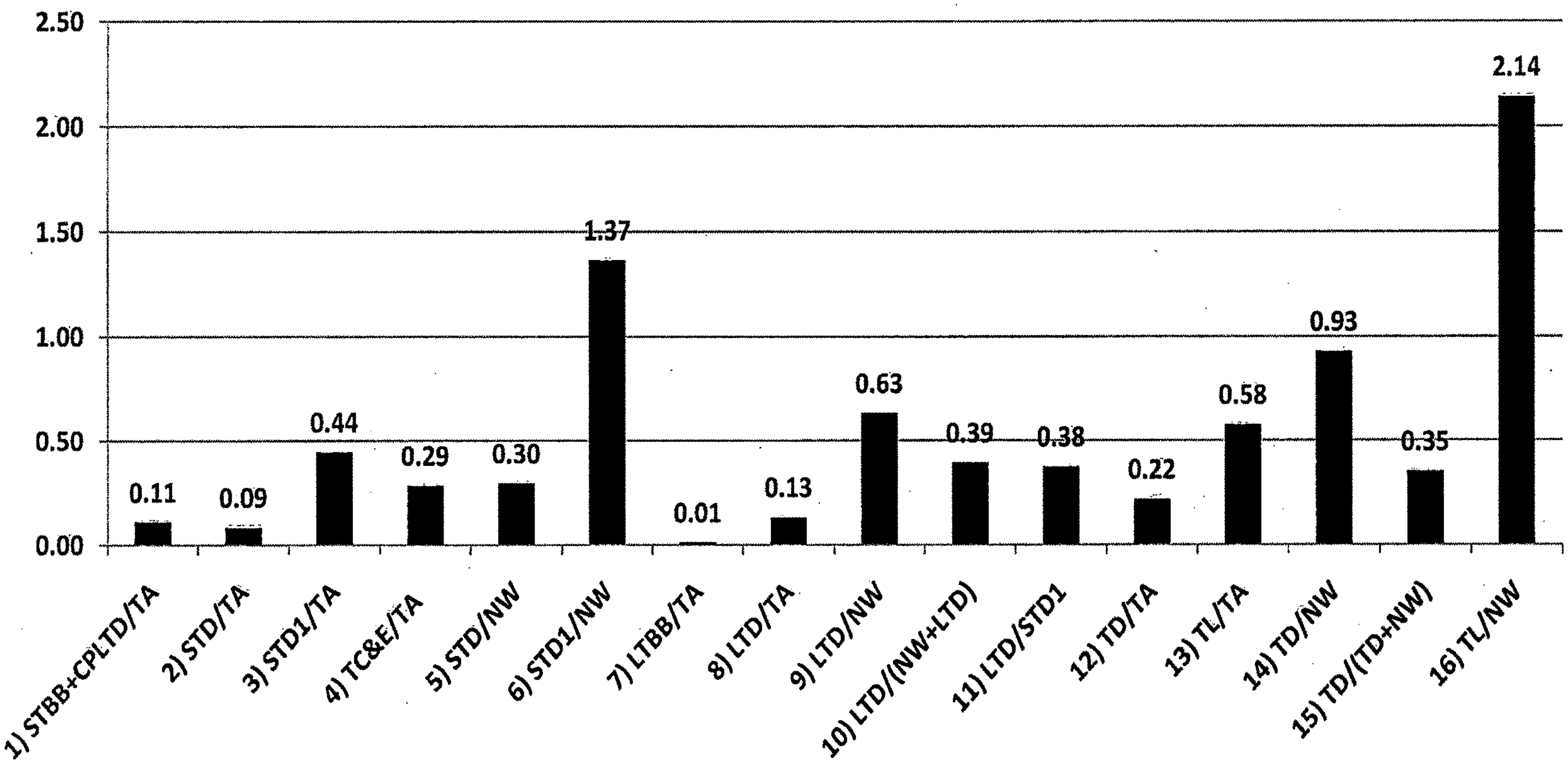


Table 4.5.1

Mean Debt Ratios by Year (Machinery Industry: 38 Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.13	0.13	0.14	0.11	0.12	0.12	0.12	0.12	0.11	0.11	0.12	0.09	0.08	0.08	0.09	0.15	0.15	0.05	0.11
2	STD/TA	0.12	0.11	0.11	0.09	0.09	0.10	0.11	0.10	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.09	0.09	0.03	0.09
3	STD1/TA	0.47	0.46	0.45	0.41	0.43	0.43	0.44	0.42	0.40	0.42	0.42	0.40	0.42	0.41	0.44	0.54	0.55	0.49	0.44
4	TC&E/TA	0.31	0.30	0.29	0.26	0.28	0.27	0.27	0.25	0.25	0.27	0.27	0.27	0.28	0.26	0.29	0.34	0.35	0.34	0.29
5	STD/NW	0.84	0.42	0.32	0.42	0.36	0.37	0.32	0.38	0.24	0.26	0.27	0.26	0.20	0.21	0.13	0.10	0.11	0.13	0.30
6	STD1/NW	2.04	2.27	1.49	1.52	1.52	1.82	1.29	2.18	0.99	1.06	1.01	1.07	0.99	1.04	1.11	1.07	1.00	1.10	1.37
7	LTBB/TA	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
8	LTD/TA	0.23	0.24	0.24	0.21	0.16	0.14	0.12	0.13	0.15	0.13	0.12	0.10	0.09	0.09	0.07	0.07	0.06	0.05	0.13
9	LTD/NW	2.44	1.21	0.85	0.76	0.64	1.03	0.39	1.97	0.28	0.28	0.25	0.24	0.17	0.17	0.33	0.17	0.10	0.10	0.63
10	LTD/(NW+LTD)	0.96	0.46	0.47	0.36	0.30	0.25	0.21	0.23	0.24	0.24	0.25	0.28	2.34	0.17	0.10	0.10	0.07	0.06	0.39
11	LTD/STD1	0.85	0.75	0.65	0.65	0.45	0.37	0.29	0.41	0.44	0.37	0.31	0.29	0.22	0.26	0.18	0.14	0.07	0.06	0.38
12	TD/TA	0.35	0.35	0.35	0.30	0.25	0.24	0.22	0.23	0.23	0.21	0.20	0.18	0.16	0.14	0.13	0.16	0.15	0.09	0.22
13	TL/TA	0.70	0.70	0.68	0.62	0.59	0.56	0.55	0.55	0.54	0.54	0.53	0.50	0.51	0.50	0.51	0.61	0.61	0.55	0.58
14	TD/NW	3.28	1.63	1.17	1.18	1.00	1.40	0.70	2.35	0.52	0.54	0.52	0.50	0.37	0.38	0.46	0.27	0.22	0.23	0.93
15	TD/(TD+NW)	0.53	0.52	0.51	0.43	0.38	0.36	0.33	0.33	0.32	0.32	0.34	0.35	0.81	0.24	0.27	0.10	0.08	0.11	0.35
16	TL/NW	7.05	3.48	2.35	2.28	2.15	2.85	1.67	4.15	1.27	1.34	1.26	1.31	1.16	1.21	1.44	1.25	1.11	1.20	2.14

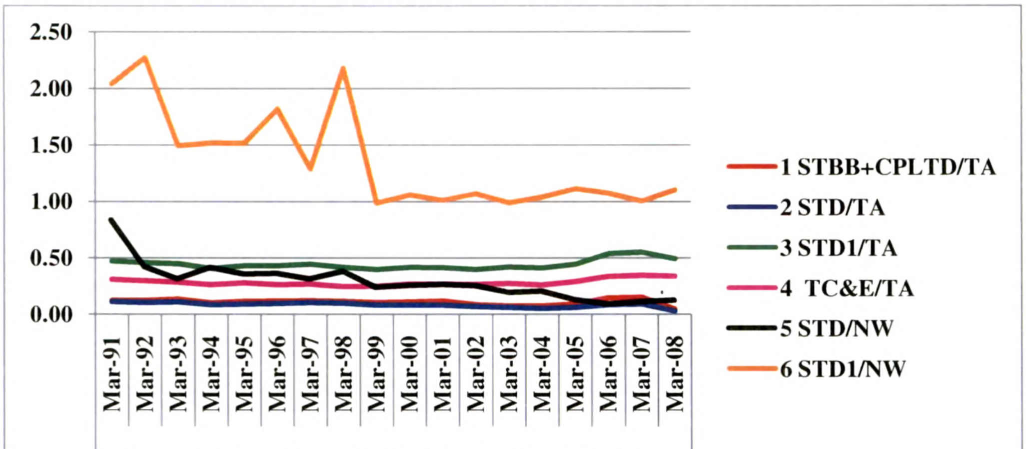


Figure 4.4.1 Short Term Debt Ratios by Year(Machinery industry- 38 FDI Companies)

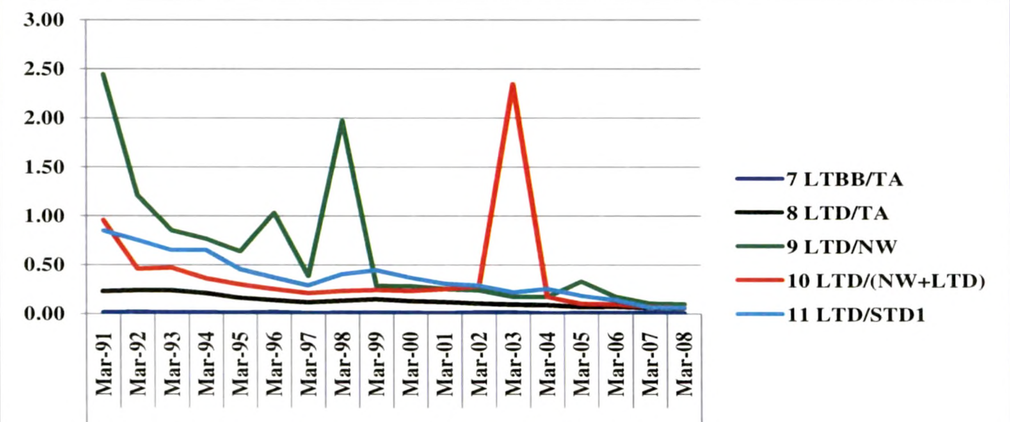


Figure 4.4.2 Long Term Debt Ratios by Year(Machinery Industry- 38 FDI Companies)

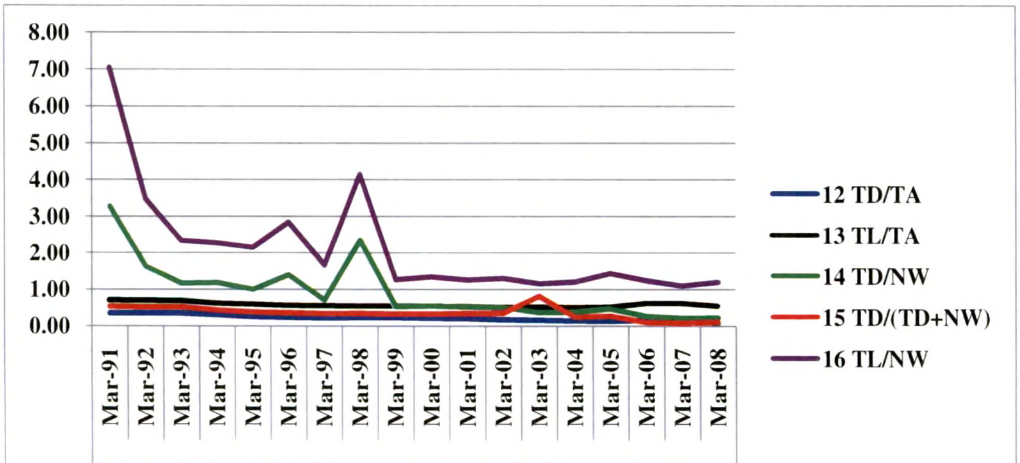


Figure 4.4.3 Total Debt Ratios by Year (Machinery Industry - 38 FDI Companies)

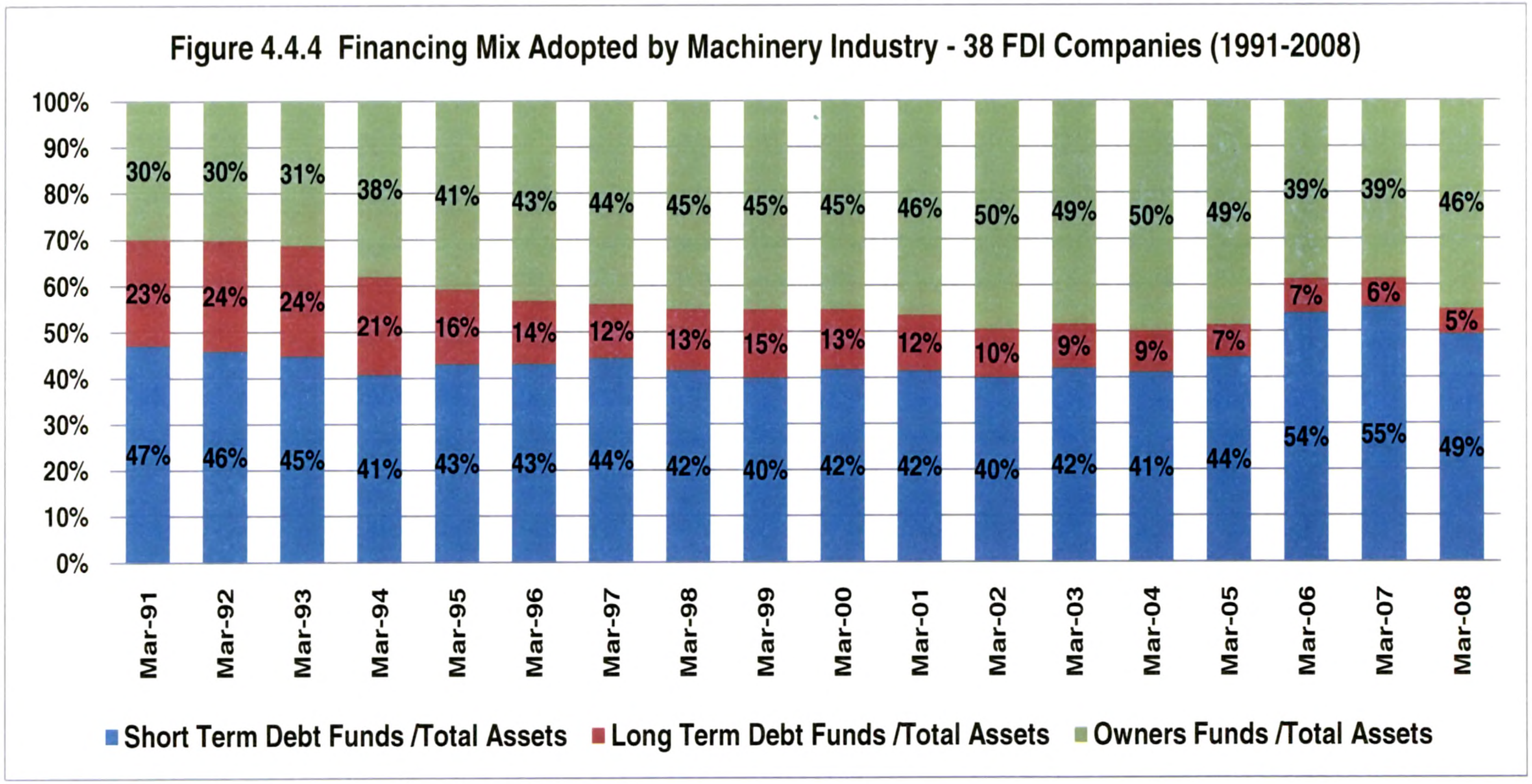


Figure 4.4.4 Financing Mix Adopted by Machinery Industry - 38 FDI Companies (1991-2008)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Mar-91
Mar-92
Mar-93
Mar-94
Mar-95
Mar-96
Mar-97
Mar-98
Mar-99
Mar-00
Mar-01
Mar-02
Mar-03
Mar-04
Mar-05
Mar-06
Mar-07
Mar-08
30% 30% 31% 38% 41% 43% 44% 45% 45% 45% 46% 50% 49% 50% 49% 39% 39% 46%
23% 24% 24% 21% 16% 14% 12% 13% 15% 13% 12% 10% 9% 9% 7% 7% 6% 5%
47% 46% 45% 41% 43% 43% 44% 42% 40% 42% 42% 40% 42% 41% 44% 54% 55% 49%
Short Term Debt Funds /Total Assets
Long Term Debt Funds /Total Assets
Owners Funds /Total Assets

4.3.3.1 Time Trends in Capital Structure of Machinery Industry

Time Trends in Debt ratios for FDI Companies in Machinery Industry have been studied with the help of Linear Trend Model (Table 4.5.2) and Quadratic Model (Table 4.5.3).

Table 4.5.2								
Linear Regression on Time Variable (Machinery Industry: 38 FDI companies)								
Debt Ratios	R square	Adjusted R square	Intercept	Slope	t-Statistic	p- value	F-Statistic	D Statistic
STBB+CPLTD/TA	0.169	0.117	0.131	-0.002	-1.802	0.090	3.247	1.646
STD/TA	0.608	0.584	0.117	-0.003	-4.985**	0.000	24.846	**1.583**
STD1/TA	0.121	0.066	0.417	0.003	1.485	0.157	2.206	**0.667**
TC& E/TA	0.157	0.105	0.264	0.002	1.728	0.103	2.985	**0.478**
STD/NW	0.699	0.681	0.551	-0.027	-6.103**	0.000	37.244	**1.424**
STD1/NW	0.563	0.536	1.950	-0.062	-4.540**	0.000	20.607	**2.265**
LTBB/TA	0.316	0.273	0.017	0.000	-2.717*	0.015	7.380	**2.000**
LTD/TA	0.904	0.898	0.238	-0.011	-12.294**	0.000	151.133	0.727
LTD/NW	0.509	0.479	1.477	-0.089	-4.076**	0.001	16.616	**1.995**
LTD/(NW+LTD)	0.024	-0.037	0.540	-0.015	-0.632	0.536	0.400	1.995
TD/TA	0.919	0.914	0.352	-0.014	-13.456**	0.000	181.067	0.952
TL/TA	0.395	0.357	0.648	-0.008	-3.233**	0.005	10.454	0.442
TD/NW	0.568	0.541	2.026	-0.115	-4.588**	0.000	21.052	**1.889**
TD/(TD+NW)	0.351	0.310	0.536	-0.019	-2.942**	0.010	8.656	**1.685**
TL/NW	0.478	0.446	3.996	-0.195	-3.829**	0.001	14.658	**1.432**
* indicates significance at 5% level								
** indicates significance at 1% level								
Critical value of ' t'								
Degrees of freedom			1%level of significance**			5%level of significance*		
16			2.9208			2.1199		
(Durbin-Watson statistic)- D statistic, K=1								
N	Prob(Alpha)		D-L (lower critical value)			D-U(upper critical value)		
16	0.01		0.84			1.09		
16	0.05		1.10			1.37		
Where N= sample size, K = Number of independent variables								

Results of both the models, the Linear Trend Model (Table 4.5.2) and the Quadratic Trend Model (4.5.3) for the FDI Companies in Machinery industry are interpreted jointly as follows:

Table 4.5.3									
Quadratic Regression on Time Variable (Machinery Industry: 38 FDI companies)									
Debt Ratios	R square	Adjusted R square	Intercept	Slopeß1	Slopeß2	t-Statistic ß1	t-Statistic ß2	F-Statistic	D Statistic
STBB+CPLTD/TA	0.179	0.069	0.138	-0.004	0.000	-0.831 (0.419)	0.428 (0.674)	1.632 (0.228)	1.686
STD/TA	0.611	0.559	0.119	-0.004	4.45E-05	-1.433 (0.172)	0.299 (0.769)	11.76 (0.001)	1.603
STD1/TA	0.637	0.588	0.498	-0.021	0.001	-3.953** (0.001)	4.612** (0.000)	13.135 (0.001)	**1.561**
TC& E/TA	0.824	0.800	0.329	-0.017	0.001	-51.608 (0.000)	7.527** (0.000)	35.015 (0.000)	**1.872**
STD/NW	0.739	0.705	0.638	-0.053	0.001	-2.969** (0.010)	1.513 (0.151)	21.269 (0.000)	1.521
STD1/NW	0.625	0.575	2.231	-0.146	0.004	-2.657* (0.018)	1.581 (0.135)	12.518 (0.001)	2.615
LTBB/TA	0.396	0.315	0.021	-0.001	5.29E-05	-2.031 (0.060)	1.410 (0.179)	4.911 (0.023)	2.247
LTD/TA	0.928	0.918	0.262	-0.018	0.000	-5.382** (0.000)	2.208* (0.043)	96.311 (0.000)	0.975
LTD/NW	0.567	0.510	1.888	-0.212	0.006	-2.371* (0.032)	1.418 (0.177)	9.838 (0.002)	2.192
LTD/(NW+LTD)	0.025	-0.105	0.517	-0.008	0.000	-0.079 (0.938)	-0.068 (0.947)	0.190 (0.829)	1.996
TD/TA	0.940	0.932	0.382	-0.023	0.000	-5.831** (0.000)	2.312* (0.035)	117.807 (0.000)	**1.341**
TL/TA	0.849	0.829	0.762	-0.042	0.002	-8.011** (0.000)	6.720** (0.000)	42.232 (0.000)	**1.665**
TD/NW	0.625	0.575	2.528	-0.266	0.008	-2.596 (0.020)	1.512 (0.151)	12.515 (0.001)	2.091
TD/(TD+NW)	0.372	0.288	0.471	0.000	-0.001	0.005 (0.996)	-0.709 (0.489)	4.445 (0.030)	1.740
TL/NW	0.611	0.559	5.407	-0.619	0.022	-3.214** (0.006)	2.264* (0.039)	11.781 (0.001)	**1.764**

Critical value of 't'		
Degrees of freedom	1%level of significance**	5%level of significance*
15	2.9467	2.1315

Durbin-Watson statistic)- D statistic, K=2			
N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
15	0.01	0.70	1.25
15	0.05	0.95	1.54

Where N= sample size, K = Number of independent variables

Note: Figures in parentheses are p-values

- On estimation of the Quadratic model, no trend is observed in STBB+CPLTD/TA and LTD/(NW+LTD) ratio.

- In some of the Debt ratios of in Machinery industry, a linear trend is observed. They are STD/TA (-ve), STD1/NW (-ve), LTBB/TA (-ve), LTD/NW (-ve), TD/NW (-ve) and TD/ (TD+NW) (-ve).

- The ratios in which Quadratic trend model fitted the best were STD1/TA, TC&E/TA, STD/NW, TD/TA, TL/TA and TL/NW. The quadratic trend indicated that these Debt ratios were decreasing at an increasing rate.

- The Debt ratio LTD/TA decreases at an increasing rate, however the problem of autocorrelation persists as 'D' statistic lies in the inconclusive area.

4.3.4 Trends in Capital Structure of Transport Industry

The aggregate Debt ratios in Table 4.6 indicate that Long Term Debt as a proportion to Net worth (LTD/NW) account for 61% and Long Term Debt contributes 31% towards capital employed as indicated by LTD/(NW+ LTD) ratio. The ratio of total outsiders funds to Owner's Funds (TL/NW) reveal that outsiders funds are 1.98 times the Owner's Funds out of which Short Term Debt funds are 1.28 times which means 64% of Total Liabilities are made up of Short Term Debt funds.

Out of Total Liabilities financing 56% of Total Assets (TL/TA ratio), Trade Credits and Equivalents contribute almost 22% indicating that Trade Credit is an important source of finance for Transport industry. Long Term Debt contributes only 17% towards financing of assets as indicated by LTD/TA ratio. In Transport Industry also TL/TA ratio seems to be the most representative measure of Capital Structure as the COV was minimum at 21.65%.

The Table 4.6.1 and Figures 4.5.1, 4.5.2, 4.5.3 reveal that all the Debt ratios which are scaled down to Net worth increase temporarily during the year 2003, which is due to one of the sample companies- Hinduja Foundries Ltd. who had a very low Net worth during the year 2003. This resulted in spikes in these ratios. All other Debt ratios in Transport industry have been relatively stable throughout the time period.

Figure 4.5.4 indicates that there was a significant decrease in preference of Long Term Debt funds as a source to finance assets from 29% in the year 1991 to 10% in the year 2008. The overall preference for Owner's Funds seemed to increase from 31% in the year 1991 to 53% in the year 2008 , The composition of Short Term Debt funds has remained more or less stable during the study period in case of Transport industry.

Table 4.6

Aggregate Debt Ratios of Transport Industry (18 FDI Companies, 1991-2008)

Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.13	0.10	0.08	64.27
2	STD/TA	0.10	0.08	0.07	71.58
3	STD1/TA	0.39	0.39	0.09	22.52
4	TC&E/TA	0.22	0.22	0.06	28.35
5	STD/NW	0.40	0.20	0.50	125.12
6	STD1/NW	1.28	0.86	1.03	80.36
7	LTBB/TA	0.04	0.03	0.03	83.19
8	LTD/TA	0.17	0.13	0.10	57.79
9	LTD/NW	0.61	0.40	0.62	101.15
10	LTD/(NW+LTD)	0.31	0.23	0.51	165.38
11	LTD/STD1	0.49	0.36	0.36	73.40
12	TD/TA	0.27	0.26	0.14	50.43
13	TL/TA	0.56	0.50	0.12	21.65
14	TD/NW	1.01	0.58	1.06	104.48
15	TD/(TD+NW)	0.38	0.34	0.19	48.96
16	TL/NW	1.98	1.48	1.68	84.97

Figure 4.5
Mean Debt Ratios of Transport Industry (18 FDI Companies:1991-2008)

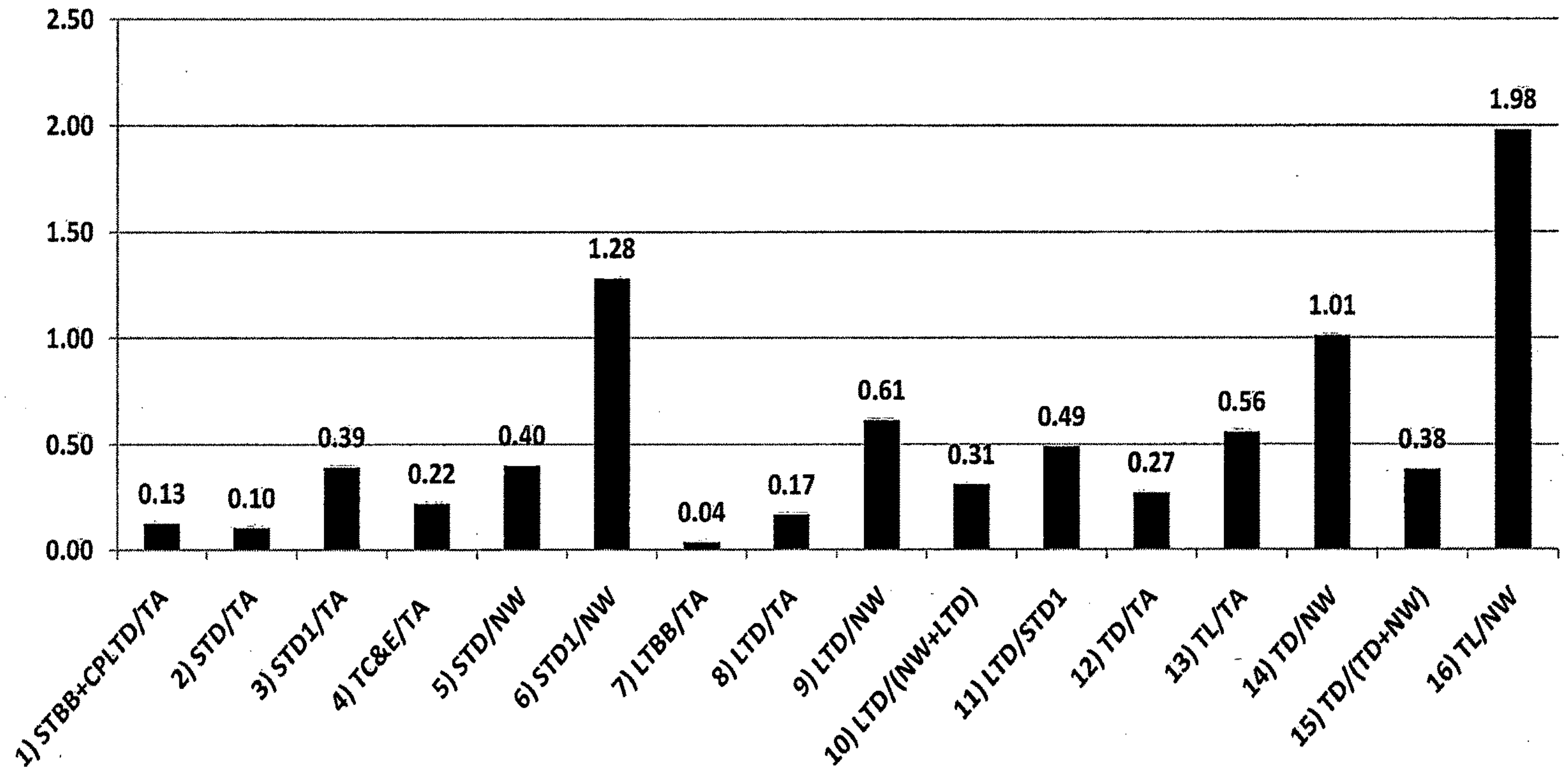


Table 4.6.1

Mean Debt Ratios by Year (Transport Industry: 18 Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.13	0.13	0.16	0.15	0.14	0.16	0.13	0.13	0.13	0.13	0.13	0.12	0.11	0.09	0.10	0.08	0.13	0.12	0.13
2	STD/TA	0.11	0.11	0.14	0.13	0.12	0.13	0.11	0.11	0.12	0.11	0.11	0.10	0.09	0.07	0.08	0.06	0.09	0.08	0.10
3	STD1/TA	0.40	0.38	0.41	0.41	0.43	0.44	0.39	0.37	0.39	0.40	0.40	0.39	0.38	0.38	0.38	0.36	0.37	0.37	0.39
4	TC&E/TA	0.24	0.23	0.23	0.23	0.25	0.24	0.21	0.21	0.21	0.21	0.21	0.20	0.21	0.23	0.21	0.22	0.22	0.21	0.22
5	STD/NW	0.31	0.22	0.25	0.83	0.40	0.38	0.33	0.36	0.38	0.34	0.35	0.36	1.53	0.24	0.24	0.16	0.24	0.26	0.40
6	STD1/NW	1.12	0.91	0.85	2.35	1.37	1.18	1.04	1.04	1.07	1.03	1.08	1.26	3.89	1.07	1.01	0.93	0.93	0.96	1.28
7	LTBB/TA	0.05	0.04	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.03	0.05	0.05	0.05	0.06	0.05	0.06	0.04
8	LTD/TA	0.29	0.28	0.25	0.21	0.15	0.14	0.15	0.16	0.17	0.14	0.15	0.14	0.16	0.15	0.13	0.13	0.11	0.10	0.17
9	LTD/NW	0.73	0.68	0.53	1.32	0.44	0.37	0.41	0.46	0.49	0.43	0.53	0.62	2.14	0.50	0.42	0.38	0.31	0.30	0.61
10	LTD/(NW+LTD)	0.58	0.44	0.41	0.34	0.30	0.27	0.25	0.26	0.28	0.38	0.22	0.23	0.75	0.21	0.18	0.17	0.16	0.14	0.31
11	LTD/STD1	0.82	0.85	0.68	0.67	0.40	0.37	0.44	0.47	0.56	0.41	0.41	0.39	0.46	0.45	0.41	0.33	0.34	0.31	0.49
12	TD/TA	0.40	0.39	0.39	0.34	0.27	0.27	0.26	0.27	0.28	0.26	0.26	0.24	0.25	0.22	0.21	0.19	0.20	0.18	0.27
13	TL/TA	0.69	0.67	0.66	0.62	0.58	0.57	0.54	0.53	0.55	0.54	0.54	0.53	0.54	0.53	0.51	0.49	0.48	0.47	0.56
14	TD/NW	1.05	0.90	0.78	2.15	0.84	0.75	0.74	0.82	0.87	0.77	0.87	0.98	3.67	0.73	0.65	0.54	0.55	0.56	1.01
15	TD/(TD+NW)	0.58	0.55	0.54	0.47	0.39	0.38	0.36	0.35	0.37	0.35	0.36	0.35	0.36	0.33	0.32	0.28	0.29	0.27	0.38
16	TL/NW	4.46	2.78	2.56	2.34	2.02	2.05	1.76	2.18	1.52	1.50	1.38	1.48	1.99	2.38	1.48	1.28	1.22	1.26	1.98

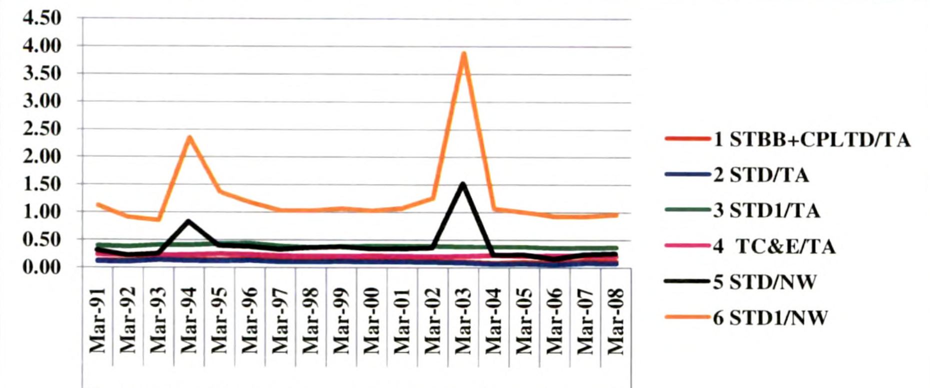


Figure 4.5 .1 Short Term Debt Ratios by Year (Transport Industry- 18 FDI Companies)

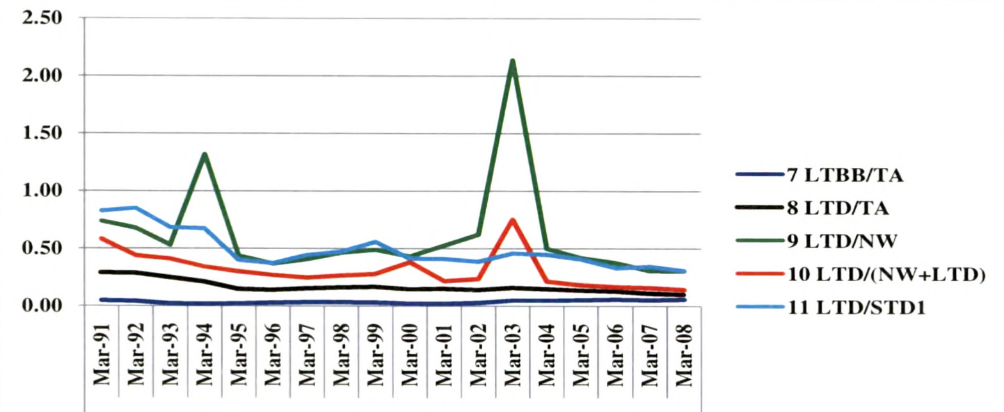


Figure 4.5.2 Long Term Debt Ratios by Year(Transport Industry- 18 FDI Companies)

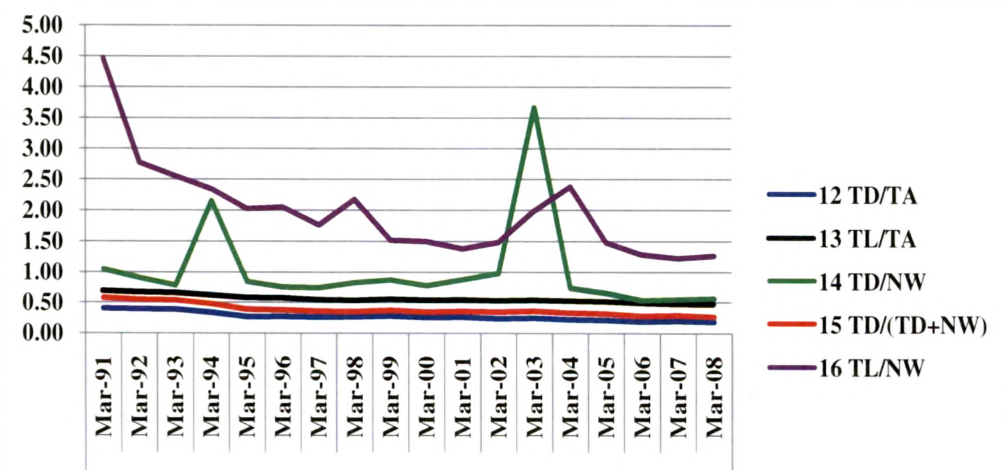
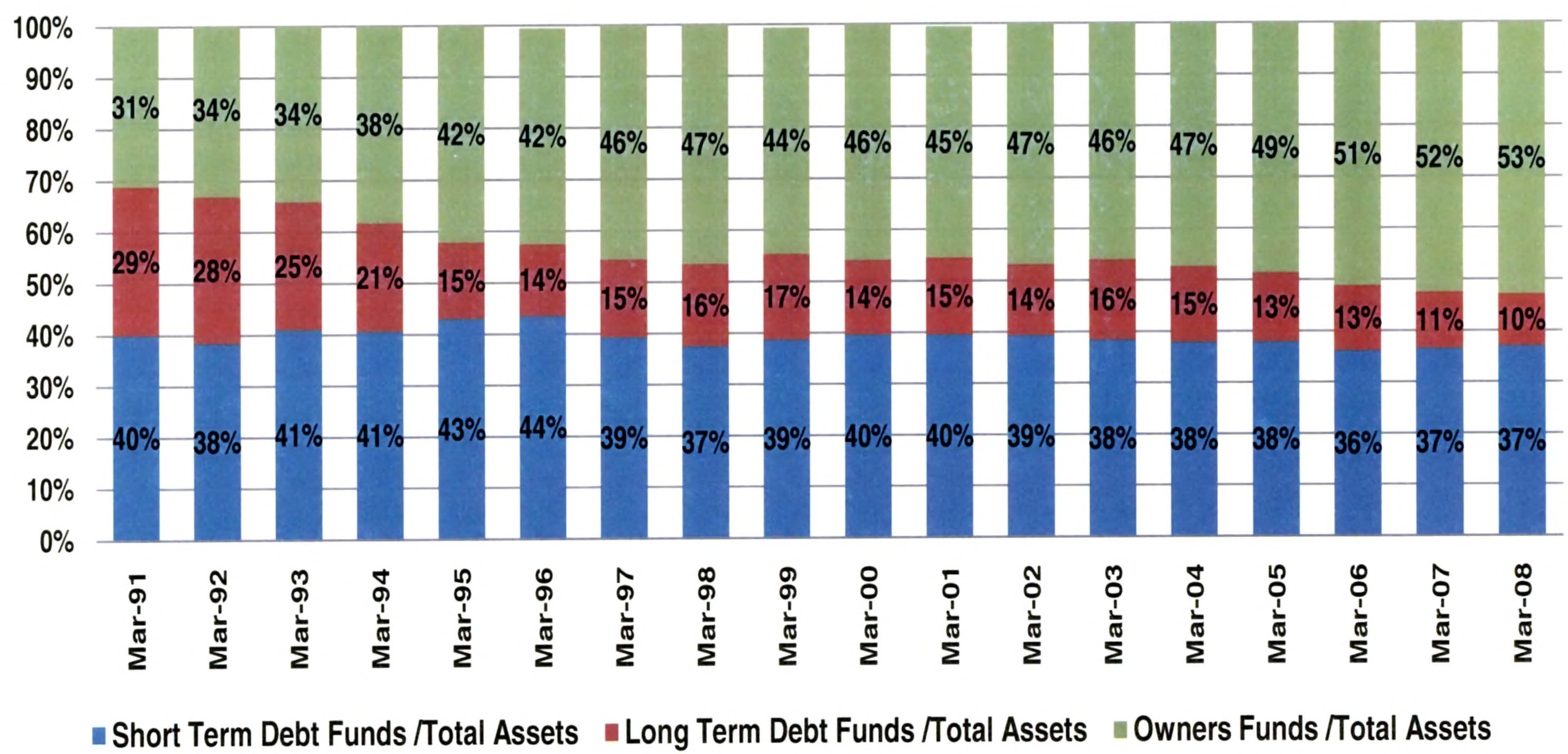


Figure 4.5.3 Total Debt Ratios by Year (Transport Industry - 18 FDI Companies)

Figure 4.5.4 Financing Mix Adopted by Transport Industry - 18 FDI Companies (1991-2008)



4.3.4.1 Time Trends in Capital Structure of Transport Industry

Table 4.6.2

Linear Regression on Time Variable (Transport Industry: 18 FDI companies)

Debt Ratios	R square	Adjusted R square	Intercept	Slope	t-Statistic	p- value	F-Statistic	D Statistic
STBB+CPLTD/TA	0.461	0.427	0.152	-0.003	-3.698**	0.002	13.675	**1.500**
STD/TA	0.654	0.632	0.135	-0.003	-.5.500**	0.000	30.254	**1.400**
STD1/TA	0.392	0.354	0.415	-0.002	-3.210**	0.005	10.305	**1.259**
TC& E/TA	0.329	0.287	0.235	-0.001	-2.803*	0.013	7.856	**1.199**
STD/NW	0.001	-0.062	0.414	-0.002	-0.106	0.917	0.011	2.117
STD1/NW	0.000	-0.062	1.270	0.001	0.040	0.968	0.002	2.015
LTBB/TA	0.340	0.299	0.022	0.002	2.870*	0.011	8.240	0.636
LTD/TA	0.685	0.665	0.248	-0.008	-5.892**	0.000	34.719	0.445
LTD/NW	0.017	-0.044	0.718	-0.011	-0.529	0.604	0.280	1.957
LTD/(NW+LTD)	0.177	0.126	0.437	-0.013	-1.855	0.082	3.440	2.135
TD/TA	0.856	0.847	0.382	-0.012	-9.758**	0.000	95.223	0.695
TL/TA	0.852	0.843	0.663	-0.011	-9.610**	0.000	92.354	0.373
TD/NW	0.008	-0.054	1.135	-0.013	-0.368	0.717	0.136	2.058
TD/(TD+NW)	0.804	0.792	0.530	-0.015	-8.111**	0.000	65.787	0.415
TL/NW	0.546	0.518	3.008	-0.108	-4.387**	0.000	19.242	0.957

* indicates significance at 5% level

** indicates significance at 1% level

Critical value of ' t'

Degrees of freedom	1%level of significance**	5%level of significance*
16	2.9208	2.1199

(Durbin-Watson statistic)- D statistic, K=1

N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
16	0.01	0.84	1.09
16	0.05	1.10	1.37

Where N= sample size, K = Number of independent variables

Results of both the models, the Linear Trend Model (Table 4.6.2) and the Quadratic Trend Model (4.6.3) for the FDI Companies in Transport industry are interpreted jointly as follows:

- On estimation of the Quadratic model, no trend is observed in ratio STD/NW, STD1/NW, LTD/NW, LTBB/TA, LTD/(NW+LTD) and TD/NW.

Table 4.6.3									
Quadratic Regression on Time Variable (Transport Industry: 18 FDI companies)									
Debt Ratios	R square	Adjusted R square	Intercept	Slopeß1	Slopeß2	t-Statistic ß1	t-Statistic ß2	F-Statistic	D Statistic
STBB+CPLTD/TA	0.464	0.393	0.148	-0.002	-5.20E-05	-0.540 (0.597)	-0.318 (0.755)	6.504 (0.009)	1.510
STD/TA	0.710	0.671	0.122	0.001	0.000	0.273 (0.789)	-1.694 (0.111)	18.328 (0.000)	1.640
STD1/TA	0.456	0.384	0.401	0.002	0.000	0.521 (0.610)	-1.335 (0.202)	6.296 (0.010)	1.402
TC& E/TA	0.463	0.391	0.248	-0.005	0.000	-2.594* (0.020)	1.932 (0.072)	6.465 (0.009)	1.499
STD/NW	0.067	-0.057	0.205	0.061	-0.003	0.978 (0.344)	-1.032 (0.318)	0.539 (0.594)	2.261
STD1/NW	0.038	-0.09	0.904	0.111	-0.006	0.758 (0.460)	-0.771 (0.453)	0.298 (0.747)	2.089
LTBB/TA	0.696	0.655	0.044	-0.005	0.000	-3.106** (0.007)	4.192** (0.001)	17.172 (0.000)	1.141
LTD/TA	0.800	0.774	0.295	-0.023	0.001	-4.556** (0.000)	2.946** (0.010)	30.03 (0.000)	0.645
LTD/NW	0.026	-0.103	0.609	0.022	-0.002	0.243 (0.811)	-0.376 (0.712)	0.203 (0.819)	1.973
LTD/(NW+LTD)	0.177	0.068	0.446	-0.016	0.000	-0.511 (0.617)	0.089 (0.930)	1.617 (0.231)	2.136
TD/TA	0.896	0.882	0.417	-0.022	0.001	-4.930** (0.000)	2.378* (0.031)	64.289 (0.000)	0.926
TL/TA	0.911	0.899	0.702	-0.023	0.001	-5.869** (0.000)	3.131** (0.007)	76.494 (0.000)	0.558
TD/NW	0.035	-0.094	0.821	0.081	-0.005	0.537 (0.599)	-0.641 (0.531)	0.271 (0.767)	2.111
TD/(TD+NW)	0.891	0.877	0.599	-0.036	0.001	-5.863** (0.000)	3.471** (0.003)	61.621 (0.000)	0.662
TL/NW	0.831	0.649	3.77	-0.337	0.012	-3.777** (0.002)	2.638*8 (0.019)	16.684 (0.000)	1.238

Critical value of 't'		
Degrees of freedom	1%level of significance**	5%level of significance*
15	2.9467	2.1315

Durbin-Watson statistic)- D statistic, K=2			
N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
15	0.01	0.70	1.25
15	0.05	0.95	1.54

Where N= sample size, K = Number of independent variables

Note: Figures in parentheses are p-values

- In some of the Debt ratios of in Transport industry, a linear trend is observed. They are STBB+CPLTD/TA (-ve), STD/TA (-ve) and STD1/TA (-ve).

- The ratios in which Quadratic trend model fitted the best were TC&E/TA, TD/TA, TL/TA, TD/(TD+NW) and TL/NW. The quadratic trend indicated that these Debt ratios were decreasing at an increasing rate.

- The Debt ratios LTD/TA decreases at an increasing rate, however the problem of autocorrelation persists as the 'D' statistic lies below the critical value.

4.3.5 Trends in Capital Structure of Services Industry

Table 4.7 indicates that in Services Industry Long Term Debt as a proportion to Net worth (LTD/NW) account for only 76%. Long Term Debt contributes only 27% towards capital employed as indicated by LTD/NW+ LTD ratio. The ratio of total outsiders funds to Owner's Funds (TL/NW) reveal that outsider's funds are only 2.50 times the owner's funds, which are higher as compared to other industries like Food industry and Chemicals industry. Out of the Total Liabilities which are 2.50 times the owner's funds, Short Term Debt funds are 1.74 times (STD1/NW) which means 69.60% of Total Liabilities are made up of Short Term Debt funds. 54% of Total Assets are financed by external funds as indicated by TL/TA ratio. Out of these external funds which are financing 54% of Total Assets, Trade Credits and Equivalents contribute almost 22% indicating that Trade Credit is an important source of finance even for services industry. Long Term Debt contributes 18% towards financing of assets as indicated by LTD/TA ratio. TL/TA ratio was the most representative measure of Capital Structure even in case of Services Industry as the COV was 37.36%.

The Table 4.7.1 and Figures 4.6.1, 4.6.2 and 4.6.3 reveal that except for Debt ratios which were scaled down to Net worth, all other Debt ratios were relatively stable throughout the time period. The Debt ratios TD/NW, STD1/NW, TL/NW and TD/NW indicated a spike in the year 2004 which was due to one sample company-

Muller &Phipps (India) Ltd, which had a very low Net worth in the year 2004. This resulted in sudden spikes in the ratio.

There was no significant change in preferences of financing mix of Services Industry over the time period. Figure 4.6.4 indicated that the proportion of Short Term Funds and Owner's Funds towards financing assets remained more or less stable increasing marginally in 2007 and 2008. The preference for Long Term Debt funds declined from 28% in 1991 to 15% in 2008. The proportion of Owner's Funds in financing assets increased from 36% in the year 1991 to 45% in the year 2008.

Table 4.7

Aggregate Debt Ratios of Service Industry (14 FDI Companies, 1991-2008

Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.09	0.07	0.09	100.97
2	STD/TA	0.08	0.03	0.10	125.83
3	STD1/TA	0.36	0.29	0.22	62.11
4	TC&E/TA	0.22	0.19	0.14	62.81
5	STD/NW	0.51	0.08	1.03	199.66
6	STD1/NW	1.74	0.69	2.58	148.53
7	LTBB/TA	0.05	0.01	0.09	179.18
8	LTD/TA	0.18	0.16	0.17	93.50
9	LTD/NW	0.76	0.61	0.79	103.18
10	LTD/(NW+LTD)	0.27	0.23	0.21	76.52
11	LTD/STD1	0.40	0.57	2.08	523.19
12	TD/TA	0.26	0.23	0.17	64.65
13	TL/TA	0.54	0.54	0.20	37.36
14	TD/NW	1.28	0.85	1.23	96.21
15	TD/(TD+NW)	0.57	0.35	0.85	149.32
16	TL/NW	2.50	1.96	2.62	104.80

Figure 4.6
Mean Debt Ratios of Service Industry (14 FDI Companies:1991-2008)

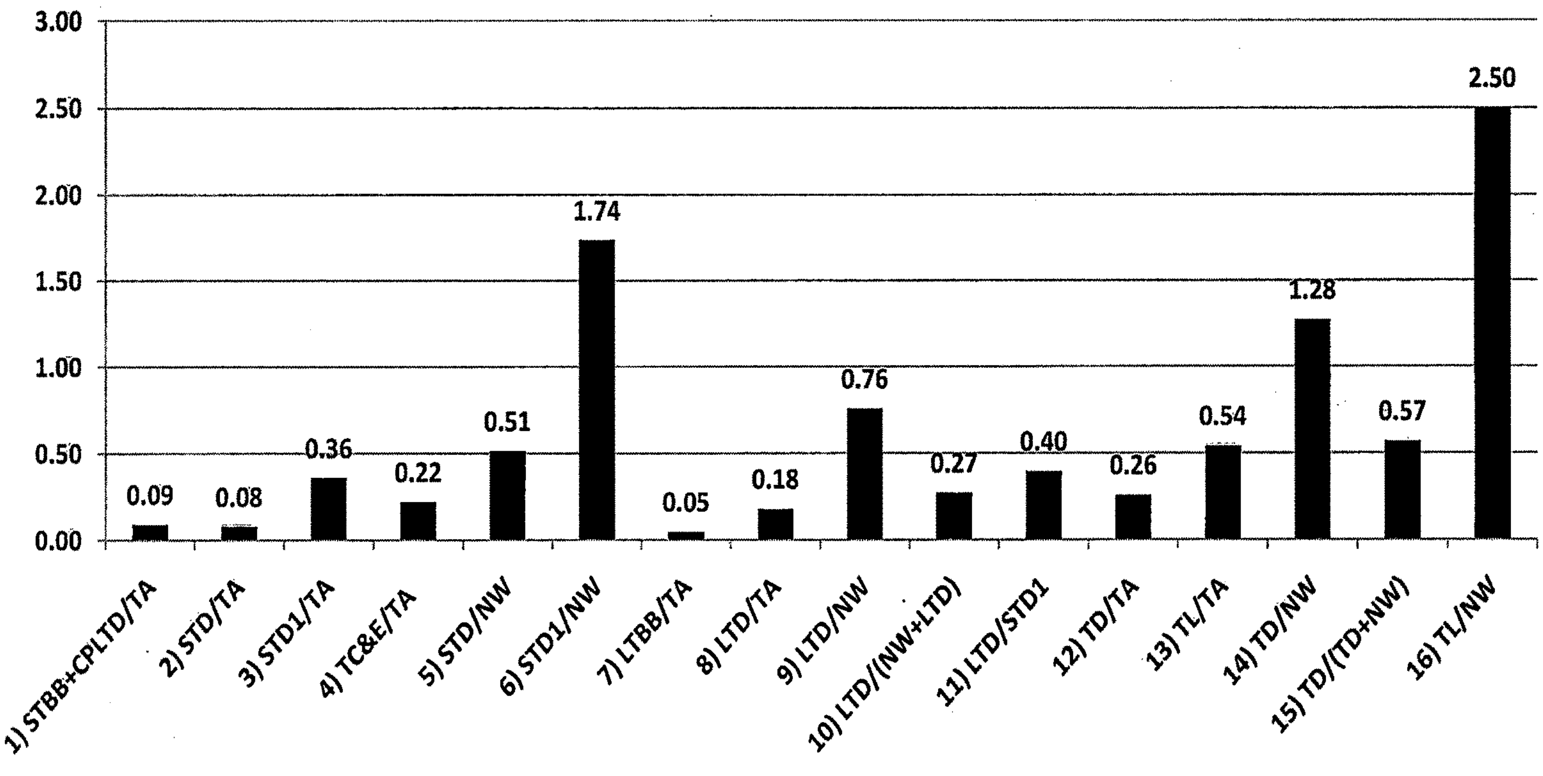


Table 4.7.1

Mean Debt Ratios by Year (Services Industry Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.11	0.11	0.13	0.09	0.09	0.09	0.08	0.10	0.08	0.08	0.08	0.08	0.10	0.08	0.09	0.07	0.12	0.10	0.09
2	STD/TA	0.09	0.10	0.12	0.09	0.08	0.09	0.07	0.09	0.07	0.06	0.07	0.07	0.10	0.07	0.08	0.05	0.08	0.08	0.08
3	STD1/TA	0.36	0.41	0.45	0.36	0.34	0.33	0.33	0.35	0.30	0.33	0.34	0.31	0.35	0.36	0.40	0.37	0.40	0.40	0.36
4	TC&E/TA	0.22	0.26	0.27	0.22	0.19	0.20	0.20	0.22	0.16	0.23	0.22	0.19	0.20	0.23	0.26	0.25	0.25	0.25	0.22
5	STD/NW	0.36	0.41	0.49	0.35	0.28	0.33	0.29	0.34	0.41	0.58	0.29	0.32	0.50	3.86	0.08	0.07	0.11	0.18	0.51
6	STD1/NW	1.63	1.57	1.73	1.38	0.99	1.03	1.04	1.17	1.33	1.93	1.16	1.18	1.48	11.03	1.03	0.57	0.39	0.64	1.74
7	LTBB/TA	0.06	0.06	0.03	0.01	0.00	0.01	0.02	0.03	0.04	0.07	0.05	0.08	0.10	0.09	0.08	0.08	0.05	0.05	0.05
8	LTD/TA	0.28	0.23	0.19	0.19	0.17	0.13	0.13	0.19	0.20	0.20	0.20	0.20	0.20	0.17	0.16	0.14	0.15	0.15	0.18
9	LTD/NW	1.96	0.98	0.73	0.83	0.72	0.26	0.31	0.63	0.82	0.94	0.76	0.85	0.83	0.93	0.85	0.42	0.44	0.43	0.76
10	LTD/(NW+LTD)	0.40	0.35	0.31	0.30	0.24	0.17	0.19	0.27	0.31	0.32	0.29	0.30	0.32	0.31	0.25	0.20	0.19	0.19	0.27
11	LTD/STD1	0.52	0.30	0.15	0.18	0.28	0.53	0.46	0.54	0.54	0.72	0.64	0.38	0.39	0.28	0.27	0.32	0.28	0.36	0.40
12	TD/TA	0.37	0.33	0.31	0.28	0.24	0.21	0.21	0.27	0.27	0.26	0.27	0.26	0.29	0.24	0.24	0.18	0.23	0.23	0.26
13	TL/TA	0.65	0.64	0.64	0.56	0.51	0.46	0.46	0.54	0.49	0.53	0.54	0.51	0.55	0.53	0.56	0.51	0.55	0.55	0.54
14	TD/NW	2.33	1.39	1.22	1.19	0.99	0.60	0.60	0.97	1.23	1.52	1.04	1.17	1.33	4.78	0.94	0.49	0.56	0.61	1.28
15	TD/(TD+NW)	0.51	0.46	0.45	0.39	0.33	0.30	0.29	0.38	0.38	0.36	0.36	0.38	0.43	0.40	1.59	0.03	0.45	2.79	0.57
16	TL/NW	3.60	2.56	2.46	2.22	1.71	1.29	1.35	1.80	2.16	2.87	1.92	2.02	2.31	11.95	1.89	0.98	0.83	1.07	2.50

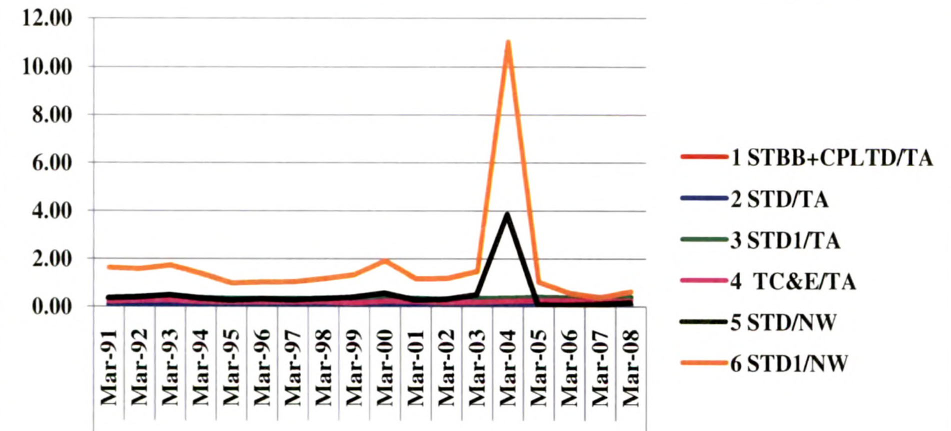


Figure 4.6.1 Short Term Debt Ratios by Year (Service Industry- 14 FDI Companies)

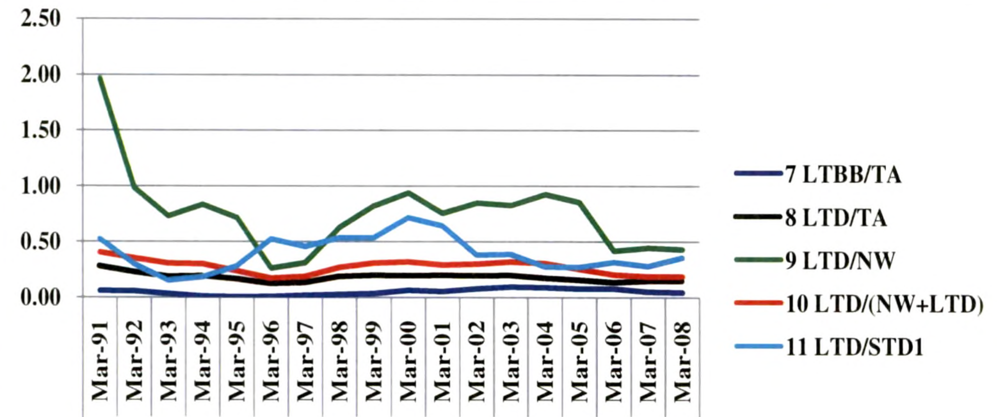


Figure 4.6.2 Long Term Debt Ratios by Year(Service Industry- 14 FDI Companies)

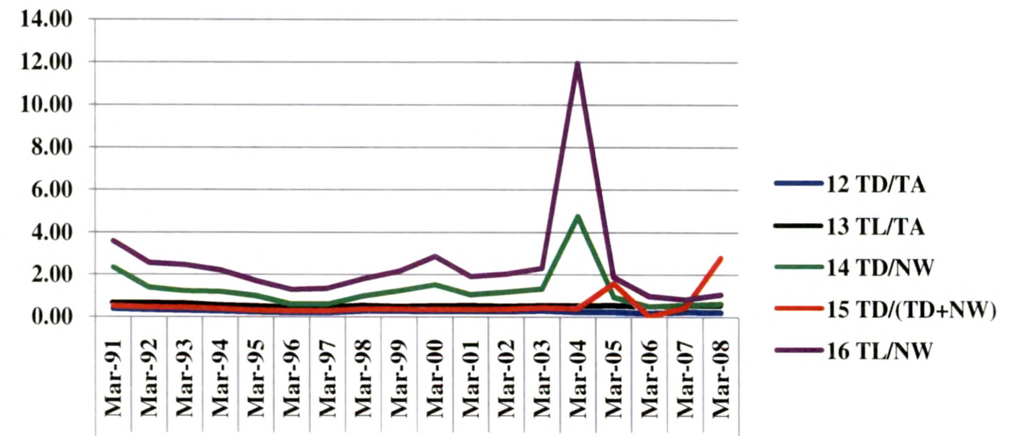
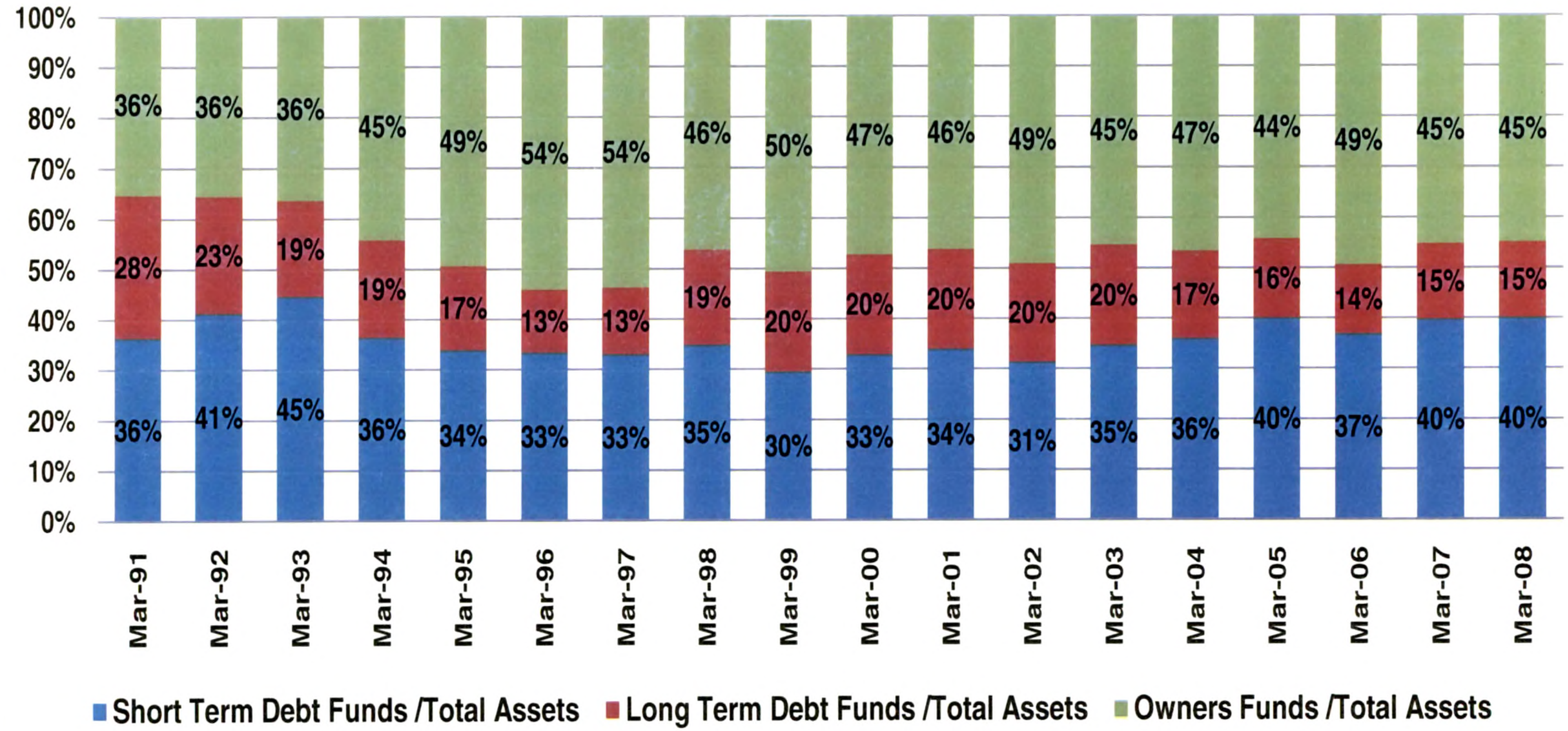


Figure 4.6.3 Total Debt Ratios by Year (Service Industry - 14 FDI Companies)

Figure 4.6.4 - Financing Mix Adopted by Service Industry - 14 FDI Companies (1991-2008)



4.3.5.1 Time Trends in Capital Structure of Services Industry

Table 4.7.2								
Linear Regression on Time Variable (Services Industry: 14 FDI companies)								
Debt Ratios	R square	Adjusted R square	Intercept	Slope	t-Statistic	p- value	F-Statistic	D Statistic
STBB+CPLTD/TA	0.091	0.034	0.102	-0.001	-1.264	0.224	1.598	1.774
STD/TA	0.281	0.236	0.097	-0.002	-2.503*	0.024	6.265	**2.041**
STD1/TA	0.000	-0.062	0.359	0.000	0.086	0.933	0.007	0.893
TC& E/TA	0.029	-0.032	0.214	0.001	0.693	0.498	0.480	1.171
STD/NW	0.013	-0.049	0.341	0.018	0.461	0.651	0.212	2.144
STD1/NW	0.009	-0.053	1.333	0.043	0.389	0.703	0.151	2.069
LTBB/TA	0.297	0.253	0.022	0.003	2.602*	0.019	6.773	0.546
LTD/TA	0.270	0.224	0.217	-0.004	-2.430*	0.027	5.907	0.611
LTD/NW	0.180	0.129	1.043	-0.030	-1.876	0.079	3.520	0.810
LTD/(NW+LTD)	0.233	0.186	0.328	-0.006	-2.207*	0.042	4.873	0.500
TD/TA	0.395	0.357	0.312	-0.005	-3.229**	0.005	10.429	0.828
TL/TA	0.134	0.079	0.579	-0.004	-1.570	0.136	2.466	0.665
TD/NW	0.004	-0.058	1.387	-0.012	-0.256	0.801	0.066	1.753
TD/(TD+NW)	0.177	0.126	0.098	0.05	1.855	0.082	3.440	1.671
TL/NW	0.001	-0.062	2.383	0.012	0.107	0.916	0.011	1.931
* indicates significance at 5% level								
** indicates significance at 1% level								

Critical value of 't'		
Degrees of freedom	1%level of significance**	5%level of significance*
16	2.9208	2.1199

(Durbin-Watson statistic)- D statistic, K=1			
N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
16	0.01	0.84	1.09
16	0.05	1.10	1.37
Where N= sample size, K = Number of independent variables			

Results of the models, the Linear Trend Model (Table 4.7.2) and the Quadratic Trend Model (4.7.3) for the Service Industry are interpreted jointly as follows:

- On estimation of the Quadratic model, no trend in some of the Debt ratios is observed. The ratios are STD/NW, STD1/NW, LTBB/TA, LTD/TA, LTD/NW, LTD/(NW+LTD), TD/TA, TD/NW, TD/(TD+NW) and TL/NW.

Table 4.7.3								
Quadratic Regression on Time Variable (Services Industry: 14 FDI companies)								
Debt Ratios	R square	Adjusted R square	Intercept	Slopeß1	Slopeß2	t-Statistic ß1	t-Statistic ß2	F-Statistic	D Statistic
STBB+CPLTD/TA	0.443	0.368	0.126	-0.008	0.00E+00	-3.359** (0.004)	3.077** (0.008)	5.956 (0.012)	**2.861**
STD/TA	0.372	0.288	0.109	-0.005	0.000	-2.039 (0.060)	1.468 (0.163)	4.436 (0.031)	2.337
STD1/TA	0.518	0.454	0.43	-0.021	0.001	-3.872** (0.002)	4.014** (0.001)	8.063 (0.004)	**1.893**
TC& E/TA	0.428	0.351	0.262	-0.013	0.001	-2.934** (0.010)	3.231** (0.006)	5.603 (0.015)	**2.022**
STD/NW	0.029	-0.101	0.068	0.100	-0.004	0.586 (0.567)	-0.493 (0.629)	0.223 (0.803)	2.174
STD1/NW	0.020	-0.110	0.698	0.233	-0.010	0.488 (0.632)	-0.411 (0.687)	0.156 (0.857)	2.089
LTBB/TA	0.304	0.211	0.028	0.001	9.80E-05	0.230 (0.821)	0.379 (0.710)	3.277 (0.066)	0.550
LTD/TA	0.298	0.205	0.233	-0.009	0.000	-1.329 (0.204)	0.784 (0.445)	3.189 (0.070)	0.606
LTD/NW	0.249	0.149	1.295	-0.105	0.004	-1.585 (0.134)	1.170 (0.260)	2.486 (0.117)	0.829
LTD/(NW+LTD)	0.234	0.132	0.332	-0.007	6.26E-05	-0.608 (0.552)	0.106 (0.917)	2.291 (0.135)	0.498
TD/TA	0.468	0.397	0.343	-0.015	0.001	-2.181 (0.046)	1.434 (0.172)	6.586 (0.009)	0.888
TL/TA	0.561	0.502	0.671	-0.031	0.001	-4.218** (0.001)	3.822** (0.002)	9.583 (0.002)	1.201
TD/NW	0.004	-0.129	1.372	-0.007	0.000	-0.036 (0.972)	-0.023 (0.982)	0.031 (0.970)	1.753
TD/(TD+NW)	0.392	0.311	0.851	-0.176	0.012	-1.744 (0.102)	2.303* (0.036)	4.835 (0.024)	2.094
TL/NW	0.004	-0.128	2.004	0.126	-0.006	0.251 (0.806)	-0.233 (0.819)	0.032 (0.968)	1.938

Critical value of ' t'		
Degrees of freedom	1%level of significance**	5%level of significance*
15	2.9467	2.1315

Durbin-Watson statistic)- D statistic, K=2			
N	Prob(Alpha)	D-L (lower critical value)	D-U(upper critical value)
15	0.01	0.70	1.25
15	0.05	0.95	1.54

Where N= sample size, K = Number of independent variables

Note: Figures in parentheses are p-values

- In one of the Debt ratios – STD/TA (-ve) a linear trend is observed.
- The ratios in which Quadratic trend model fitted the best were STBB+CPLTD/TA, STD1/TA and TC&E/TA ratio. The quadratic trend indicated that these Debt ratios were decreasing at an increasing rate.
- The Debt ratio TL/TA decreases at an increasing rate, however the problem of autocorrelation persists as 'D' statistic lies in the inconclusive area.

4.3.6 Trends in Capital Structure of Metal & Metal Products Industry

The aggregate Debt ratios in Table 4.8 indicate that Metal & Metal Products Industry has the highest TL/NW ratio among all industries. LTD/NW ratio indicates that Long Term Debt is 1.52 times the Net worth, which is also the highest among all industries. Long Term Debt contributes 53% towards capital employed as indicated by LTD/NW+LTD ratio. The TL/NW ratio reveals that outsider's funds are 2.70 times the owner's funds. Out of the total outsiders funds which are 2.70 times the Owner's Funds, Short Term Debt funds are 1.18 times (STD1/NW) which means 43% of Total Liabilities are made up of Short Term Debt funds. This means that share of Short Term Debt funds in total external funds is lowest in case of Metal& Metal Products industry.

67% of Total Assets are financed by external funds as indicated by TL/TA ratio. Out of these external funds which are financing 67% of Total Assets, Trade Credits and Equivalents contribute 23% indicating that Trade Credit is an important source of finance. Long Term Debt contributes 31% towards financing of assets as indicated by LTD/TA ratio. In Metal & Metal Products industry STBB+CPTTD/TA ratio was the most representative measure of leverage as COV was 29.21%.followed by TL/TA which had COV of 35.53%.

Table 4.8.1 and Figures 4.7.1, 4.7.2 and Figure 4.7.3 indicate that that there had been wide fluctuations in certain Debt ratios of Metal & Metal products industry. STD1/NW and STD/NW ratios even became negative due to existence of negative Net worth of Ferro Alloys Corporation Ltd, one of the member companies of the group. From the year 2004 onwards, again the ratio STD1/TW is showing an increasing trend. All the other ratios which have been scaled to Net worth also indicated large fluctuations except that overall they showed a declining trend. Figure 4.74 indicates that owner's funds increased from 25% in 1991 to 48% in the year 2008. Proportion of Long Term funds in financing of assets declined from 37% in the year 1991 to 14% in the year 2008 indicating shift in preferences of Metal & Metal products industry's financing mix. Proportion of short term funds more or less remained stable during the study period.

Table 4.8

Aggregate Debt Ratios of Metal & Metal Products Industry (6 FDI Companies, 1991-2008)

Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.11	0.10	0.03	29.21
2	STD/TA	0.07	0.05	0.03	51.00
3	STD1/TA	0.36	0.31	0.17	46.99
4	TC&E/TA	0.23	0.17	0.13	58.28
5	STD/NW	0.28	0.27	0.17	60.08
6	STD1/NW	1.18	1.27	0.53	44.70
7	LTBB/TA	0.03	0.02	0.03	112.84
8	LTD/TA	0.31	0.30	0.19	59.71
9	LTD/NW	1.52	1.26	1.41	92.52
10	LTD/(NW+LTD)	0.53	0.40	0.37	70.39
11	LTD/STD1	1.45	0.81	1.09	75.26
12	TD/TA	0.38	0.34	0.19	50.76
13	TL/TA	0.67	0.61	0.24	35.53
14	TD/NW	1.80	1.52	1.47	81.89
15	TD/(TD+NW)	0.43	0.40	0.22	50.31
16	TL/NW	2.70	2.37	1.71	63.42

Figure 4.7
Mean Debt Ratios of Metal & Metal Products Industry (6 FDI Companies:1991-2008)

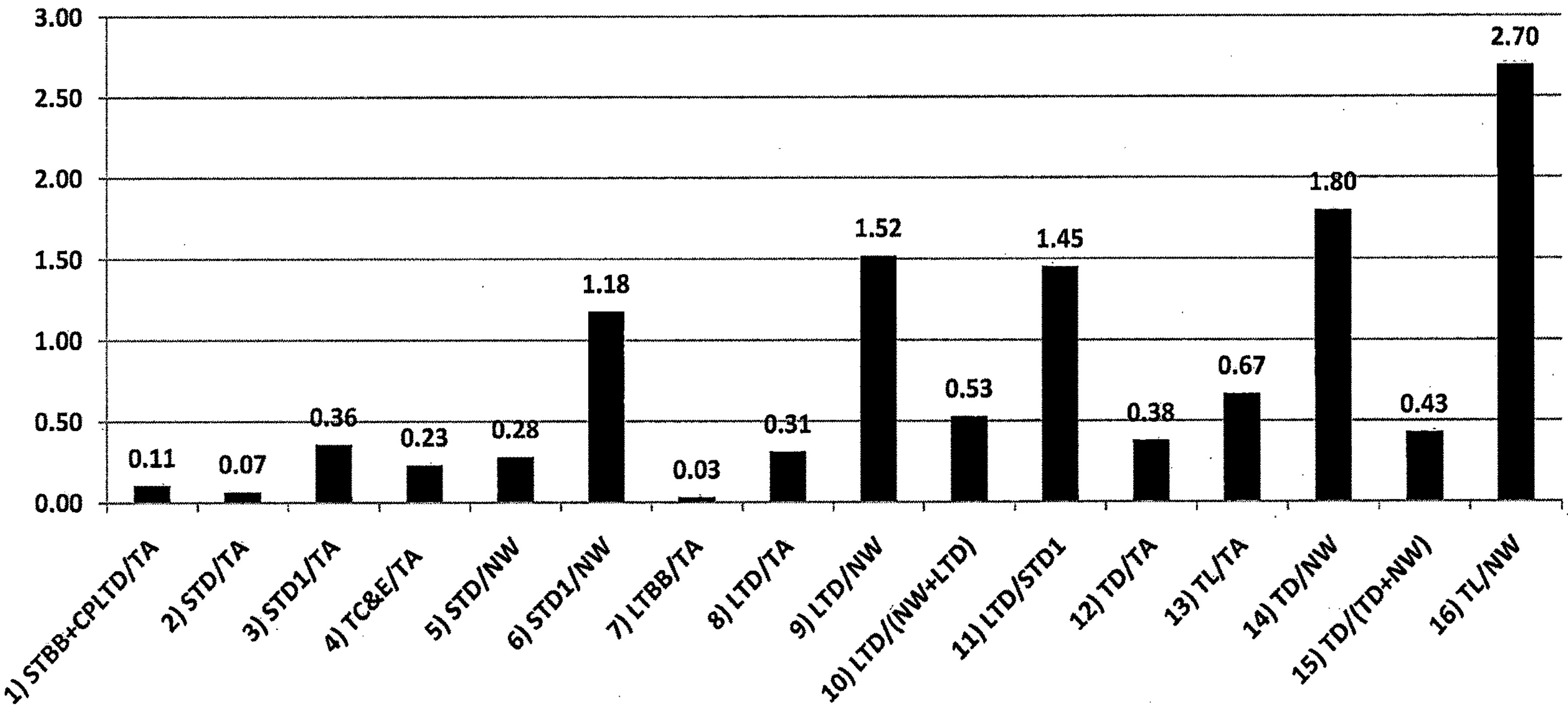


Table 4.8.1

	Mean Debt Ratios by Year (Metal &Metal Products Industry: 6 Companies)																		Mean
	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	1991-2008
1	STBB+CPLTD/TA	0.13	0.13	0.12	0.12	0.09	0.11	0.11	0.10	0.10	0.16	0.11	0.12	0.06	0.07	0.08	0.09	0.11	0.09	0.11
2	STD/TA	0.11	0.10	0.08	0.08	0.07	0.09	0.09	0.07	0.08	0.10	0.08	0.08	0.02	0.02	0.02	0.04	0.03	0.04	0.07
3	STD1/TA	0.38	0.35	0.33	0.26	0.27	0.32	0.34	0.36	0.37	0.42	0.42	0.45	0.43	0.32	0.32	0.37	0.34	0.38	0.36
4	TC&E/TA	0.25	0.22	0.22	0.17	0.18	0.19	0.21	0.24	0.27	0.27	0.30	0.33	0.35	0.21	0.18	0.19	0.19	0.17	0.23
5	STD/NW	0.54	1.04	0.57	0.38	0.48	0.38	1.00	-0.17	0.02	0.00	0.04	0.08	0.08	0.08	0.09	0.15	0.15	0.15	0.28
6	STD1/NW	1.77	3.31	2.34	1.40	1.70	1.24	2.83	-0.37	0.20	0.31	0.31	0.57	0.48	0.94	0.87	1.11	1.06	1.13	1.18
7	LTBB/TA	0.02	0.01	0.02	0.02	0.01	0.00	0.00	0.03	0.05	0.03	0.02	0.01	0.07	0.05	0.08	0.06	0.04	0.04	0.03
8	LTD/TA	0.37	0.48	0.36	0.45	0.41	0.31	0.30	0.33	0.31	0.28	0.30	0.32	0.37	0.24	0.22	0.20	0.22	0.14	0.31
9	LTD/NW	1.79	5.17	2.38	2.25	2.41	1.36	2.52	0.63	0.55	0.51	0.74	1.45	0.93	1.23	0.70	0.98	1.02	0.76	1.52
10	LTD/(NW+LTD)	0.59	0.74	0.56	0.61	0.57	0.47	0.48	0.55	0.69	3.55	-0.31	0.02	-0.52	0.34	0.31	0.30	0.32	0.23	0.53
11	LTD/STD1	1.11	2.10	1.30	2.99	2.21	1.44	1.26	1.35	1.23	1.02	1.21	1.19	1.48	1.54	1.87	0.95	1.16	0.73	1.45
12	TD/TA	0.48	0.58	0.45	0.53	0.47	0.41	0.39	0.40	0.39	0.39	0.39	0.40	0.39	0.26	0.24	0.23	0.25	0.18	0.38
13	TL/TA	0.75	0.83	0.69	0.71	0.67	0.64	0.64	0.68	0.69	0.70	0.73	0.77	0.80	0.56	0.53	0.56	0.56	0.52	0.67
14	TD/NW	2.33	6.21	2.95	2.63	2.89	1.74	3.52	0.46	0.56	0.51	0.78	1.53	1.01	1.31	0.79	1.13	1.17	0.90	1.80
15	TD/(TD+NW)	0.65	0.77	0.60	0.65	0.60	0.53	0.53	0.58	0.64	0.73	1.35	-1.01	-0.58	0.36	0.34	0.34	0.36	0.28	0.43
16	TL/NW	3.56	8.48	4.72	3.65	4.11	2.60	5.35	0.25	0.75	0.82	1.05	2.02	1.41	2.17	1.57	2.09	2.08	1.88	2.70

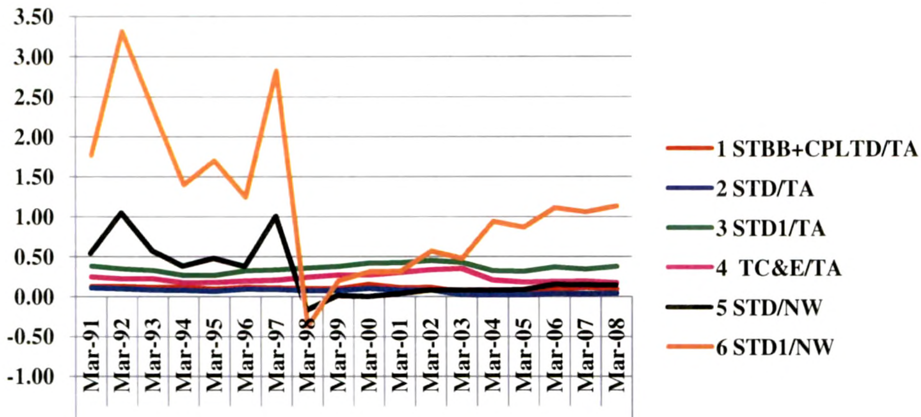


Figure 4. 7 .1 Short Term Debt Ratios by Year (Metal & Metal Products Industry- 6 FDI Companies)

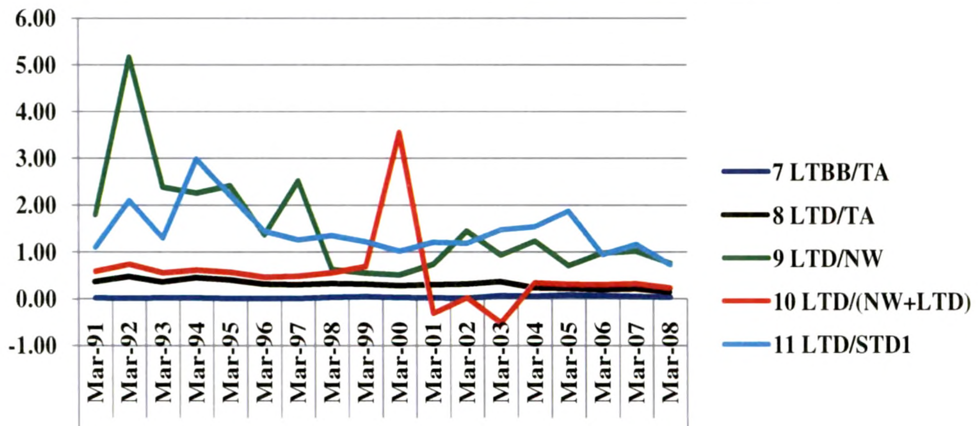


Figure 4.7.2 Long Term Debt Ratios by Year(Metal &Metal products Industry- 6 FDI Companies)

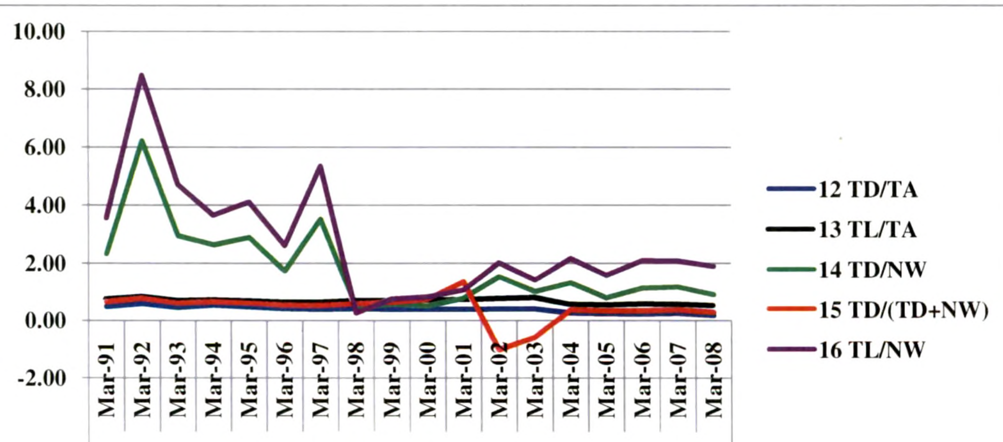
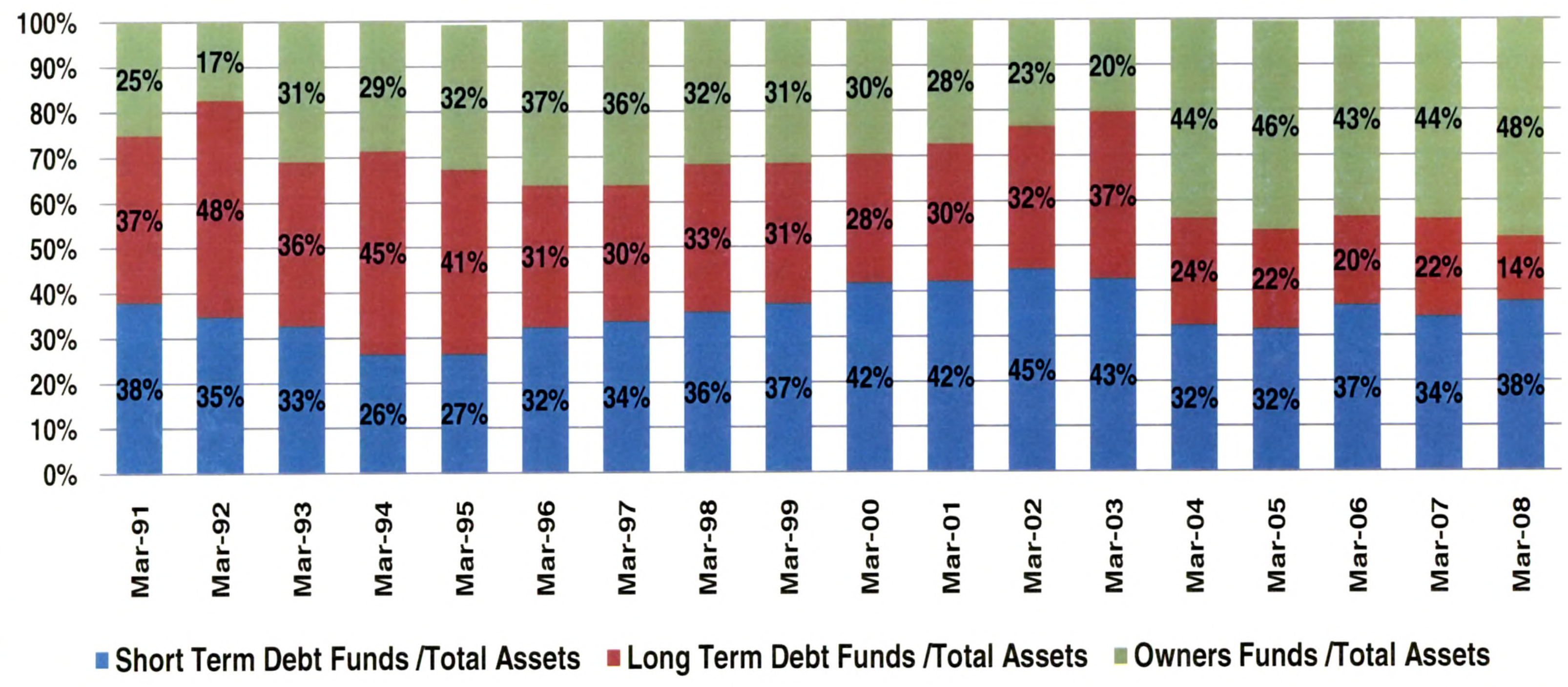


Figure 4.7.3 Total Debt Ratios by Year (Metal & Metal Products Industry - 6 FDI Companies)

Figure 4.6.4 - Financing Mix Adopted by Metal & Metal Products Industry - 6 FDI Companies (1991-2008)



4.3.7 Trends in Capital Structure of Non-Metallic Minerals Industry

The aggregate Debt ratios in Table 4.9 indicate that Long Term Debt as a proportion to Net worth (LTD/NW) is 1.2 times, which is higher than all other industries except Metal & Metal Products Industry. Long Term Debt contributes only 41% towards capital employed as indicated by LTD/NW+ LTD ratio. The TL/NW ratio reveals that outsider's funds are 2.42 times the Owner's Funds out of which Short Term Debt funds are 1.29 times which means 53% of Total Liabilities are made up of Short Term Debt funds.

Out of Total Liabilities financing 60% of Total Assets (TL/TA ratio), Trade Credits and Equivalents contribute 13%, which is lower proportion than other industries. Long Term Debt contributes 27% towards financing of assets as indicated by LTD/TA ratio. In this industry also TL/TA ratio seems to be the most representative measure of leverage with COV minimum at 18.43%.

Table 4.9

Aggregate Debt Ratios of Non-Metallic Minerals Industry (5 FDI Companies, 1991-2008)

Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.16	0.16	0.10	62.17
2	STD/TA	0.14	0.13	0.09	66.11
3	STD1/TA	0.33	0.35	0.12	36.08
4	TC&E/TA	0.13	0.16	0.06	42.40
5	STD/NW	0.63	0.53	0.56	89.26
6	STD1/NW	1.29	1.20	0.87	67.18
7	LTBB/TA	0.03	0.02	0.03	107.18
8	LTD/TA	0.27	0.31	0.11	41.03
9	LTD/NW	1.20	0.96	0.63	52.18
10	LTD/(NW+LTD)	0.41	0.45	0.15	37.98
11	LTD/STD1	0.67	0.93	1.44	215.32
12	TD/TA	0.41	0.42	0.16	38.71
13	TL/TA	0.60	0.57	0.11	18.43
14	TD/NW	1.83	1.49	1.15	62.70
15	TD/(TD+NW)	0.50	0.47	0.18	35.71
16	TL/NW	2.49	1.80	1.40	56.31

Figure 4.8

Mean Debt Ratios of Non Metallic Minerals Industry (5 FDI Companies:1991-2008)

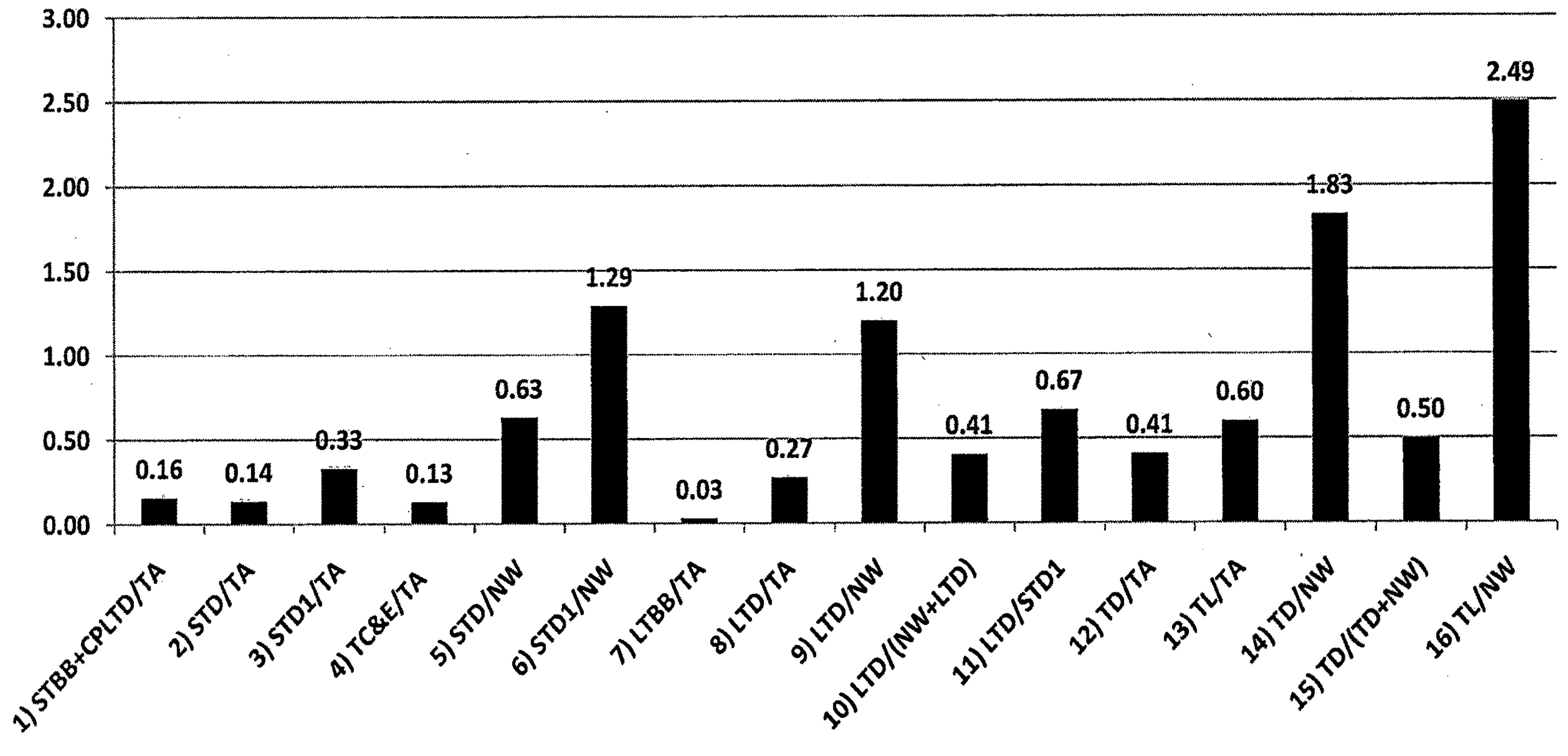


Table 4.9.1

Debt Ratios by Year (Non Metallic Minerals Industry: 5 Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.14	0.19	0.16	0.20	0.21	0.25	0.20	0.18	0.18	0.17	0.17	0.17	0.09	0.07	0.11	0.08	0.14	0.15	0.16
2	STD/TA	0.12	0.16	0.14	0.18	0.14	0.23	0.17	0.16	0.16	0.16	0.15	0.14	0.08	0.06	0.09	0.07	0.13	0.13	0.14
3	STD1/TA	0.33	0.36	0.31	0.33	0.31	0.40	0.36	0.32	0.34	0.34	0.32	0.33	0.27	0.27	0.32	0.29	0.36	0.39	0.33
4	TC&E/TA	0.17	0.17	0.15	0.15	0.15	0.16	0.16	0.13	0.12	0.12	0.11	0.11	0.11	0.11	0.11	0.09	0.11	0.12	0.13
5	STD/NW	0.90	0.82	0.80	0.87	0.70	1.33	0.84	0.71	0.65	0.56	0.43	0.54	0.26	0.15	0.32	0.33	0.55	0.56	0.63
6	STD1/NW	2.14	1.79	1.60	1.87	1.55	2.20	1.54	1.26	1.19	1.03	0.86	1.01	0.74	0.60	0.82	0.78	1.11	1.14	1.29
7	LTBB/TA	0.06	0.01	0.01	0.00	0.06	0.05	0.06	0.09	0.08	0.02	0.04	0.01	0.01	0.01	0.03	0.01	0.00	0.01	0.03
8	LTD/TA	0.48	0.41	0.37	0.34	0.39	0.31	0.25	0.28	0.25	0.17	0.20	0.20	0.23	0.22	0.20	0.24	0.20	0.17	0.27
9	LTD/NW	2.91	1.94	2.03	2.17	1.91	1.11	0.94	1.17	0.97	0.44	0.59	0.60	0.90	0.63	0.61	0.96	0.93	0.78	1.20
10	LTD/(NW+LTD)	0.70	0.63	0.55	0.52	0.58	0.52	0.38	0.39	0.36	0.27	0.30	0.31	0.32	0.29	0.29	0.34	0.31	0.28	0.41
11	LTD/STD1	1.72	1.32	1.28	0.99	0.79	0.81	0.77	0.59	0.52	0.44	0.37	0.26	0.17	0.25	0.60	0.55	0.35	0.30	0.67
12	TD/TA	0.60	0.57	0.52	0.52	0.54	0.54	0.42	0.44	0.41	0.33	0.35	0.34	0.31	0.28	0.28	0.31	0.33	0.29	0.41
13	TL/TA	0.81	0.76	0.69	0.69	0.71	0.72	0.62	0.62	0.60	0.52	0.53	0.54	0.50	0.48	0.51	0.50	0.54	0.53	0.60
14	TD/NW	3.80	2.77	2.83	3.04	2.61	2.44	1.78	1.88	1.62	1.00	1.02	1.15	1.16	0.79	0.93	1.29	1.49	1.34	1.83
15	TD/(TD+NW)	0.75	0.71	0.63	0.63	0.66	0.67	0.52	0.52	0.48	0.39	0.41	0.41	0.37	0.34	0.34	0.37	0.40	0.36	0.50
16	TL/NW	5.05	3.74	3.64	4.05	3.46	3.31	2.48	2.43	2.16	1.47	1.45	1.62	1.64	1.23	1.43	1.74	2.05	1.92	2.49

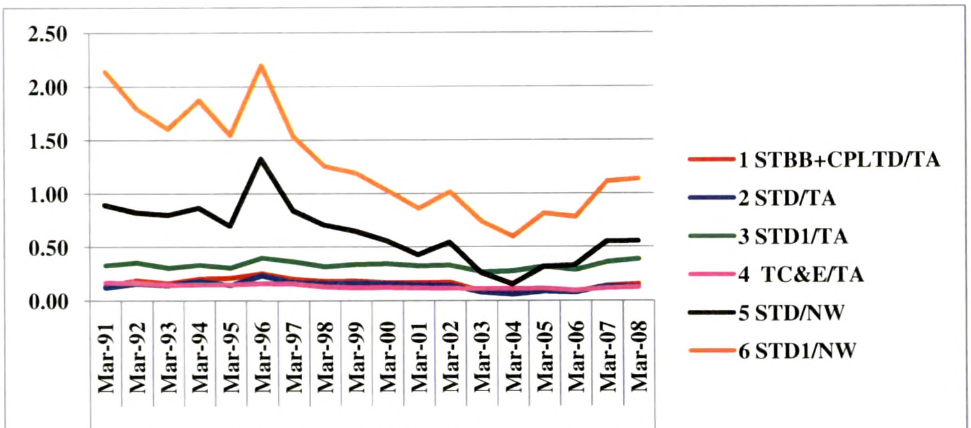


Figure 4. 8 .1 Short Term Debt Ratios by Year (Non Metallic Minerals Industry- 5 FDI Companies)

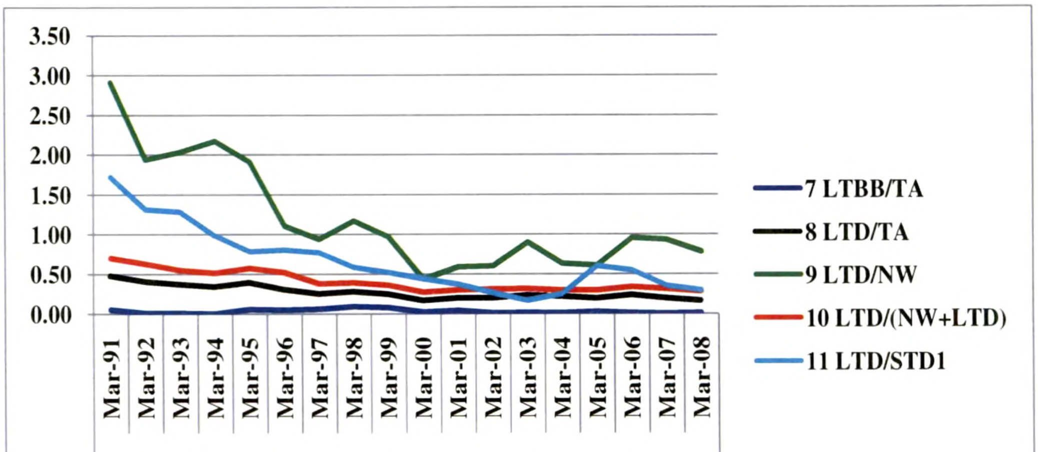


Figure 4.8.2 Long Term Debt Ratios by Year(Non Metallic Minerals Industry- 5 FDI Companies)

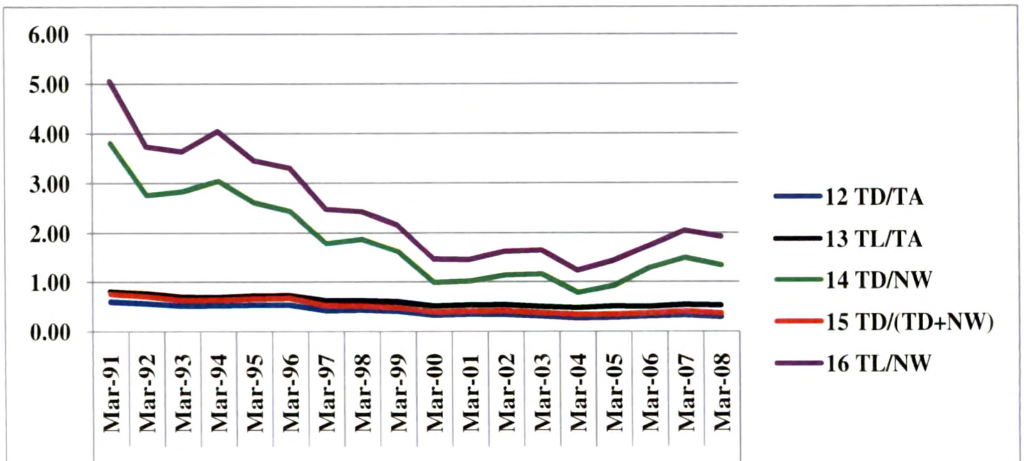


Figure 4.8.3 Total Debt Ratios by Year (Non Metallic Minerals Industry - 5 FDI Companies)

Table 4.9.1 and Figures 4.8.1, 4.8.2 and 4.8.3 indicate that Short Term Debt ratios-STD/NW and STD1/NW show a declining trend although noticeable spikes were seen in STD/NW and STD1/NW ratios during the year 1996. This was due to one of the sample company 'Asahi India Glass Ltd' which had borrowed lot of Short Term Debt funds especially Short Term Bank Borrowings during that period. Other Short Term Debt ratios were relatively stable over the time period. Long Term ratios LTD/NW and Total Debt Ratios TD/NW and TL/NW indicated a declining trend. All the other Long Term and Total Debt Ratios remained stable during the study period.

Figure 4.8.4 shows that preference of Owner's Funds to finance assets has increased in Non-Metallic Minerals Industry over the study period from 19% in the year 1991 to 44% in the year 2008. Preference for Long Term Debt funds has decreased from 48% in the year 1991 to 17% in the year 2008. Preference for Short Term Funds remained the same throughout the study period showing slight increase in the years 1996 and 2008.

4.3.8 Trends in Capital Structure of Miscellaneous Manufacturing Industry

The aggregate Debt ratios in Table 4.10 indicate that Long Term Debt as a proportion to Net worth is 62%. Long Term Debt contributes only 27% towards capital employed as indicated by LTD/NW+ LTD ratio. The TL/NW ratio reveals that outsider's funds are 1.78 times the Owner's Funds out of which Short Term Debt funds are 1.16 times which means 65% of Total Liabilities are made up of Short Term Debt funds.

Out of Total Liabilities financing 53% of Total Assets (TL/TA ratio), Trade Credits and Equivalents contribute 23% indicating that Trade Credit is an important source of finance for Miscellaneous industry. Long Term Debt contributes 27% towards financing of assets as indicated by LTD/TA ratio. In Miscellaneous Manufacturing Industry also TL/TA ratio seems to be the most representative measure of leverage with COV minimum at 23.57%.

Figure 4.8.4 - Financing Mix Adopted by Non Metallic Minerals Industry - 5 FDI Companies (1991-2008)

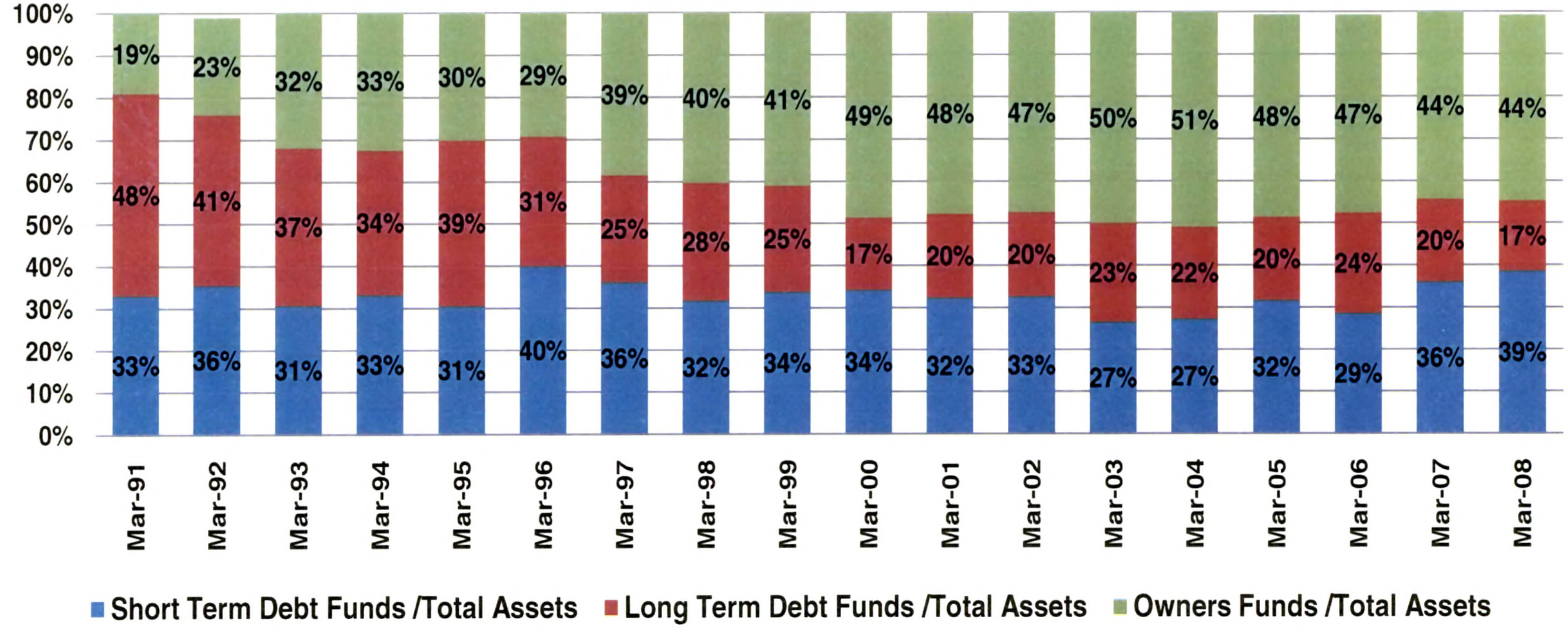


Table 4.10					
Aggregate Debt Ratios of Miscellaneous Manufacturing Industry (5 FDI Companies, 1991-2008)					
Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.07	0.08	0.04	61.98
2	STD/TA	0.07	0.07	0.04	62.87
3	STD1/TA	0.37	0.35	0.10	26.78
4	TC&E/TA	0.23	0.25	0.09	38.72
5	STD/NW	0.24	0.23	0.18	73.62
6	STD1/NW	1.16	1.21	0.48	41.55
7	LTBB/TA	0.04	0.01	0.05	139.74
8	LTD/TA	0.16	0.18	0.12	72.69
9	LTD/NW	0.62	0.46	0.51	81.87
10	LTD/(NW+LTD)	0.27	0.28	0.18	65.80
11	LTD/STD1	0.61	0.57	0.42	69.98
12	TD/TA	0.23	0.25	0.14	60.02
13	TL/TA	0.53	0.54	0.13	23.57
14	TD/NW	0.86	0.89	0.60	69.86
15	TD/(TD+NW)	0.34	0.38	0.20	57.01
16	TL/NW	1.78	2.08	0.81	45.47

Table 4.10.1 and Figures 4.9.1, 4.9.2 and 4.9.3 indicate that STD1/NW and LTD/NW, TD/NW and TL/NW ratios indicated a sudden fall from the year 1993 to the year 1994 and 1995. This was due to the fact that the Net worth of the sample companies of Miscellaneous industry had substantially increased during the period. As a result, all the Debt ratios which were scaled down to Net worth indicated a sharp decline during the year 1994. Thereafter these Debt ratios of Miscellaneous manufacturing industry remained more or less stable. The proportion of Long Term Debt to Short Term Debt (LTD/STD1) kept on fluctuating during the study period. Other Debt ratios indicated a stable trend.

Figure 4.9.4 indicated that preference for Owner's Funds has a substantial increase from 25% in the year 1991 to 62% in the year 2008 whereas preference for Long Term Debt funds decreased from 27% in the year 1991 to 10% in the year 2008. Even preference for Short Term Debt funds declined over the study period from 48% in the year 1991 to 28% in the year 2008

Figure 4.9

Mean Debt Ratios of Miscellaneous manufacturing Industry (5 FDI Companies:1991-2008)

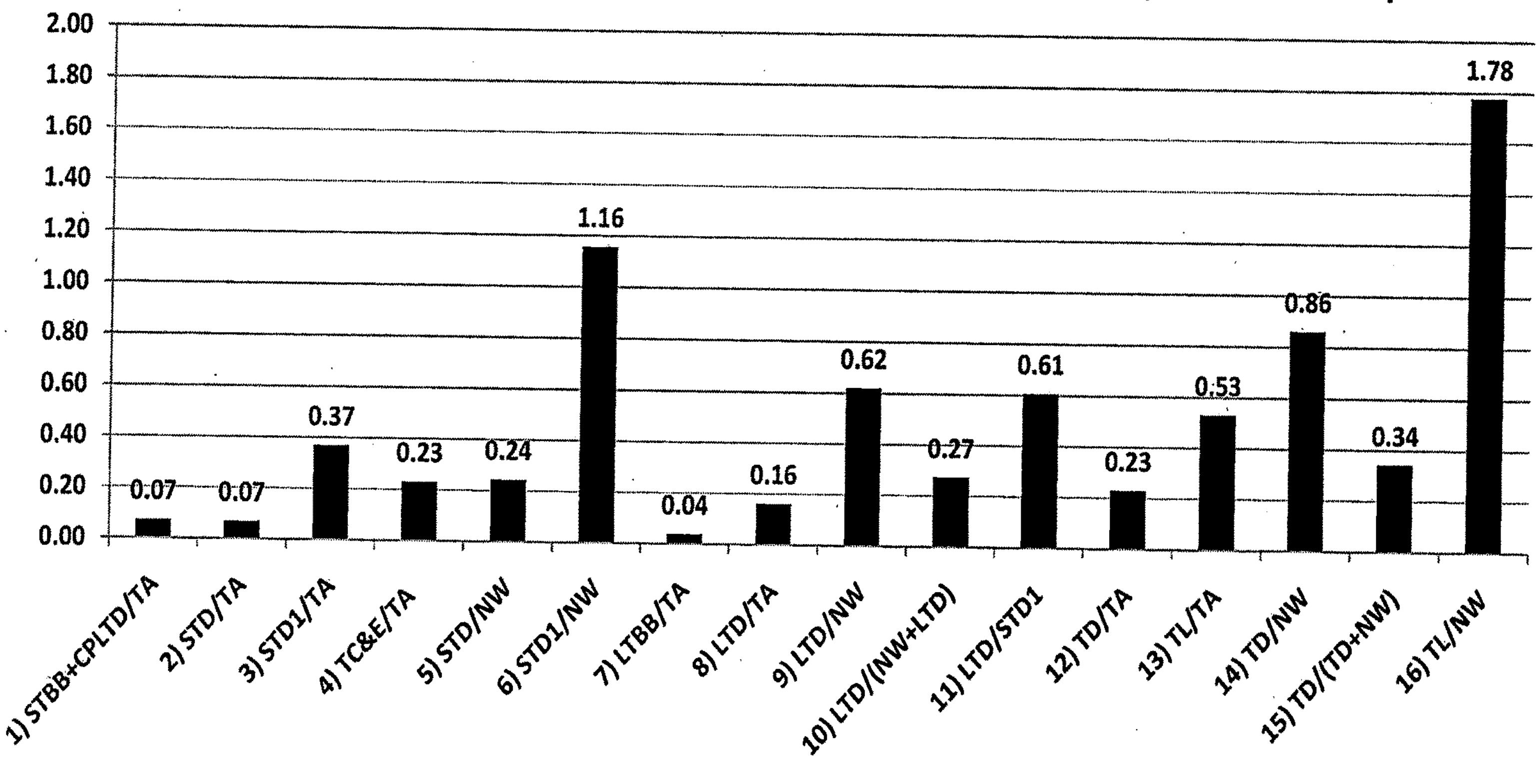


Table 4.10.1

	Mean Debt Ratios by Year (Miscellaneous Manufacturing Industry: 5 Companies)																		Mean
	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	1991-2008
1	STBB+CPLTD/TA	0.10	0.09	0.08	0.05	0.06	0.07	0.06	0.05	0.05	0.05	0.07	0.06	0.08	0.11	0.11	0.08	0.08	0.06	0.07
2	STD/TA	0.10	0.09	0.08	0.05	0.06	0.07	0.06	0.05	0.05	0.05	0.07	0.06	0.07	0.11	0.10	0.07	0.06	0.06	0.07
3	STD1/TA	0.48	0.48	0.49	0.44	0.36	0.38	0.36	0.33	0.33	0.33	0.34	0.30	0.29	0.36	0.39	0.43	0.30	0.28	0.37
4	TC&E/TA	0.26	0.26	0.31	0.27	0.23	0.19	0.20	0.24	0.27	0.22	0.20	0.20	0.18	0.19	0.24	0.32	0.19	0.19	0.23
5	STD/NW	0.47	0.40	0.43	0.12	0.15	0.31	0.27	0.13	0.14	0.15	0.18	0.20	0.20	0.28	0.40	0.21	0.17	0.14	0.24
6	STD1/NW	2.05	1.92	2.39	1.16	0.89	1.24	1.11	0.74	0.86	0.80	0.80	0.87	0.79	1.00	1.56	1.27	0.73	0.67	1.16
7	LTBB/TA	0.03	0.02	0.04	0.01	0.00	0.00	0.00	0.01	0.04	0.07	0.07	0.06	0.05	0.03	0.08	0.05	0.07	0.08	0.04
8	LTD/TA	0.27	0.26	0.26	0.17	0.16	0.16	0.16	0.13	0.17	0.17	0.15	0.17	0.16	0.11	0.13	0.09	0.09	0.10	0.16
9	LTD/NW	1.54	1.24	1.48	0.56	0.33	0.40	0.42	0.33	0.58	0.55	0.49	0.75	0.62	0.37	0.51	0.30	0.33	0.36	0.62
10	LTD/(NW+LTD)	0.46	0.45	0.50	0.28	0.23	0.25	0.26	0.21	0.27	0.26	0.21	0.27	0.27	0.21	0.28	0.19	0.16	0.15	0.27
11	LTD/STD1	0.79	0.66	0.60	0.54	0.75	0.79	0.68	0.41	0.67	0.70	0.76	0.87	0.72	0.43	0.38	0.28	0.37	0.52	0.61
12	TD/TA	0.36	0.35	0.34	0.22	0.21	0.22	0.22	0.18	0.22	0.22	0.22	0.23	0.23	0.22	0.23	0.16	0.16	0.16	0.23
13	TL/TA	0.74	0.74	0.75	0.61	0.52	0.53	0.52	0.46	0.51	0.50	0.49	0.47	0.45	0.48	0.52	0.52	0.39	0.38	0.53
14	TD/NW	2.01	1.64	1.91	0.68	0.48	0.71	0.69	0.46	0.72	0.70	0.67	0.95	0.82	0.66	0.92	0.51	0.50	0.50	0.86
15	TD/(TD+NW)	0.54	0.52	0.56	0.34	0.29	0.32	0.31	0.25	0.31	0.30	0.29	0.32	0.33	0.33	0.39	0.29	0.24	0.23	0.34
16	TL/NW	3.58	3.16	3.87	1.72	1.21	1.64	1.53	1.07	1.43	1.35	1.29	1.62	1.41	1.37	2.08	1.58	1.06	1.03	1.78

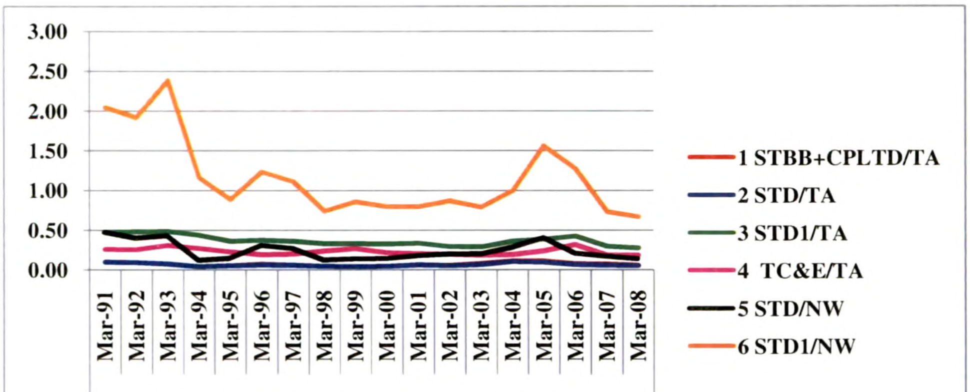


Figure 4. 9 .1 Short Term Debt Ratios by Year (Miscellaneous Manufacturing Industry- 5 FDI Companies)

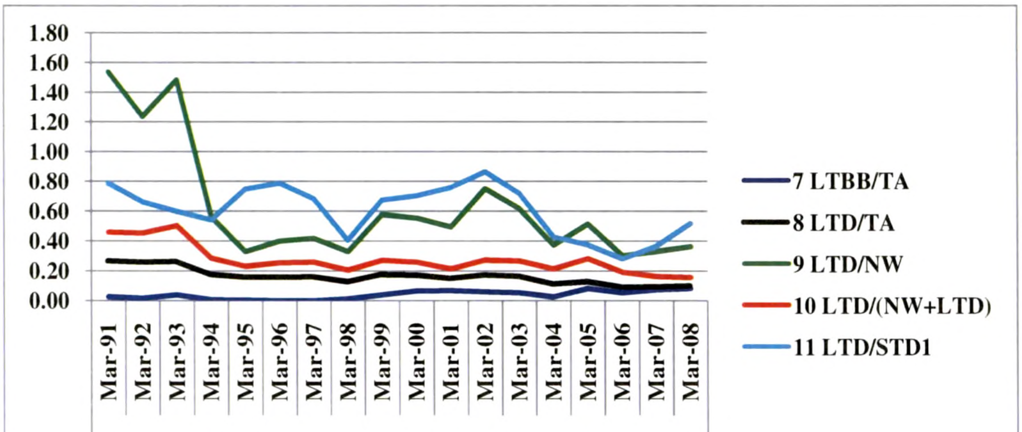


Figure 4.9.2 Long Term Debt Ratios by Year(Miscellaneous Manufacturing Industry- 5 FDI Companies)

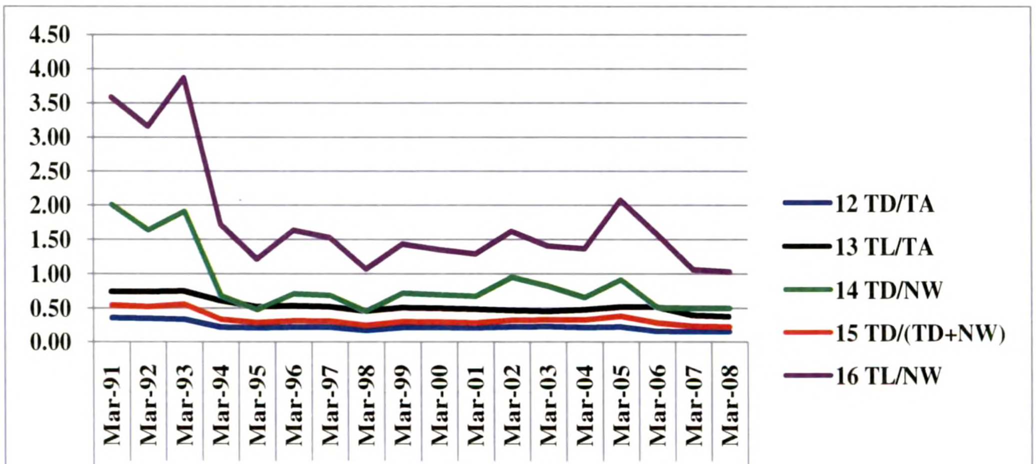


Figure 4.9.3 Total Debt Ratios by Year (Miscellaneous manufacturing Industry - 5 FDI Companies)

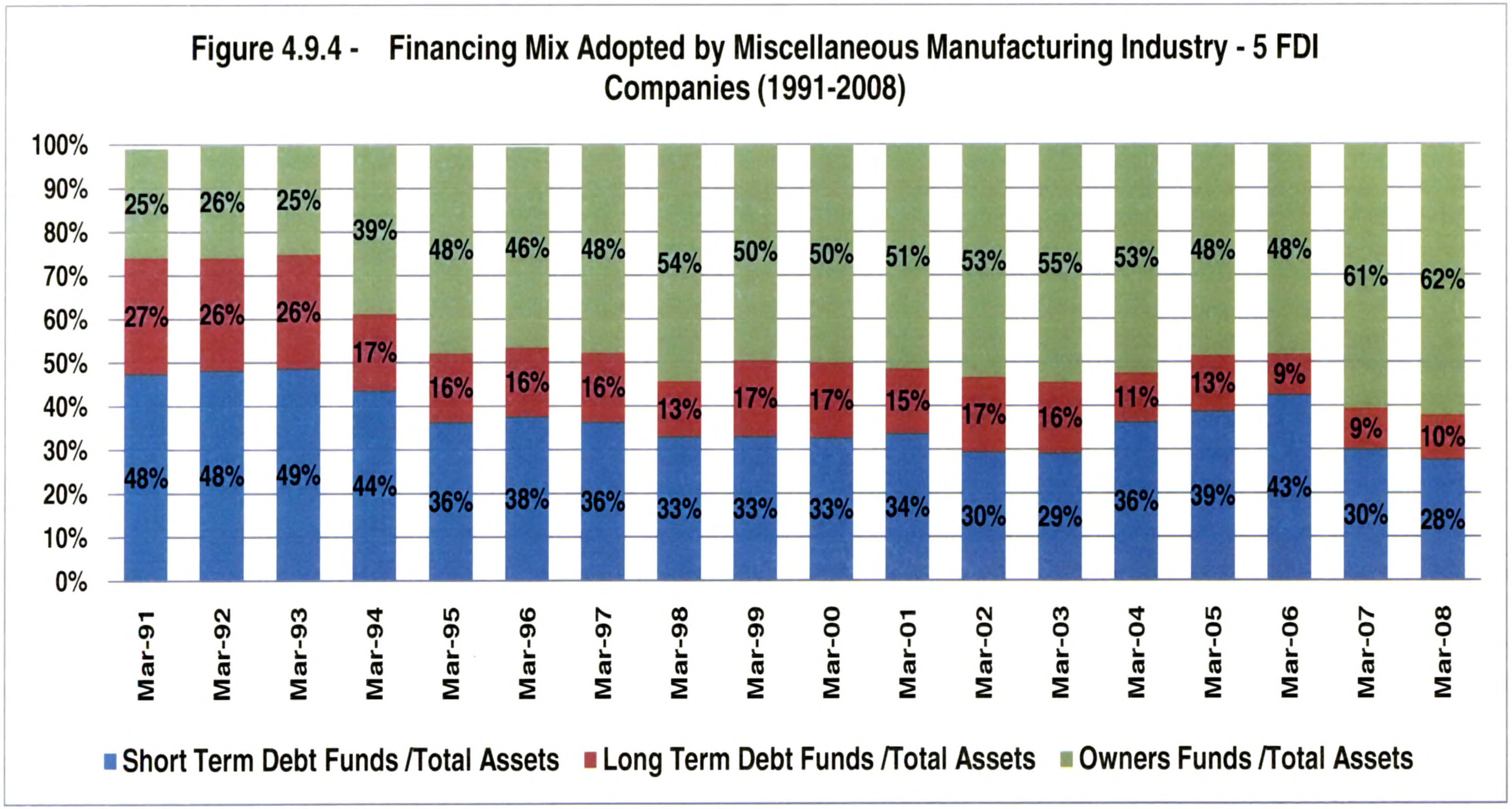


Figure 4.9.4 - Financing Mix Adopted by Miscellaneous Manufacturing Industry - 5 FDI Companies (1991-2008)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Mar-91
Mar-92
Mar-93
Mar-94
Mar-95
Mar-96
Mar-97
Mar-98
Mar-99
Mar-00
Mar-01
Mar-02
Mar-03
Mar-04
Mar-05
Mar-06
Mar-07
Mar-08
Short Term Debt Funds /Total Assets
Long Term Debt Funds /Total Assets
Owners Funds /Total Assets

4.3.9 Trends in Capital Structure of Textiles Industry

Aggregate Debt ratios in Table 4.11 indicate that Long Term Debt as a proportion to Net worth is 1.17 times. Long Term Debt contributes only 42% towards capital employed as indicated by LTD/NW+ LTD ratio. The 'TL/NW ratio reveals that outsider's funds are 1.97 times the Owner's Funds out of which Short Term Debt funds are .80 times which means 40.60% of Total Liabilities are made up of Short Term Debt funds.

Out of Total Liabilities financing 55% of Total Assets (TL/TA ratio), Trade Credits and Equivalents contribute 14% and total Short Term Debt funds contribute 25% towards financing the assets, the rest 30% being financed by Long Term Debt funds. In Textiles industry, STD1/TA ratio seems to be the most representative measure of leverage with COV minimum at 8.17%.

Table 4.11

Aggregate Debt Ratios of Textiles Industry (3 FDI Companies, 1991-2008)

Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.13	0.15	0.09	68.64
2	STD/TA	0.09	0.09	0.06	64.16
3	STD1/TA	0.25	0.26	0.02	8.17
4	TC&E/TA	0.14	0.15	0.04	25.14
5	STD/NW	0.31	0.39	0.23	73.46
6	STD1/NW	0.80	0.84	0.45	55.97
7	LTBB/TA	0.08	0.09	0.04	57.26
8	LTD/TA	0.30	0.39	0.21	71.65
9	LTD/NW	1.17	1.27	1.02	87.65
10	LTD/(NW+LTD)	0.42	0.54	0.31	73.22
11	LTD/STD1	1.24	1.71	0.88	71.02
12	TD/TA	0.23	0.09	0.26	114.98
13	TL/TA	0.55	0.65	0.23	42.54
14	TD/NW	1.47	1.75	1.21	82.05
15	TD/(TD+NW)	0.47	0.62	0.32	67.16
16	TL/NW	1.97	2.10	1.47	74.80

Figure 4.10
Mean Debt Ratios of Textiles Industry (3 FDI Companies:1991-2008)

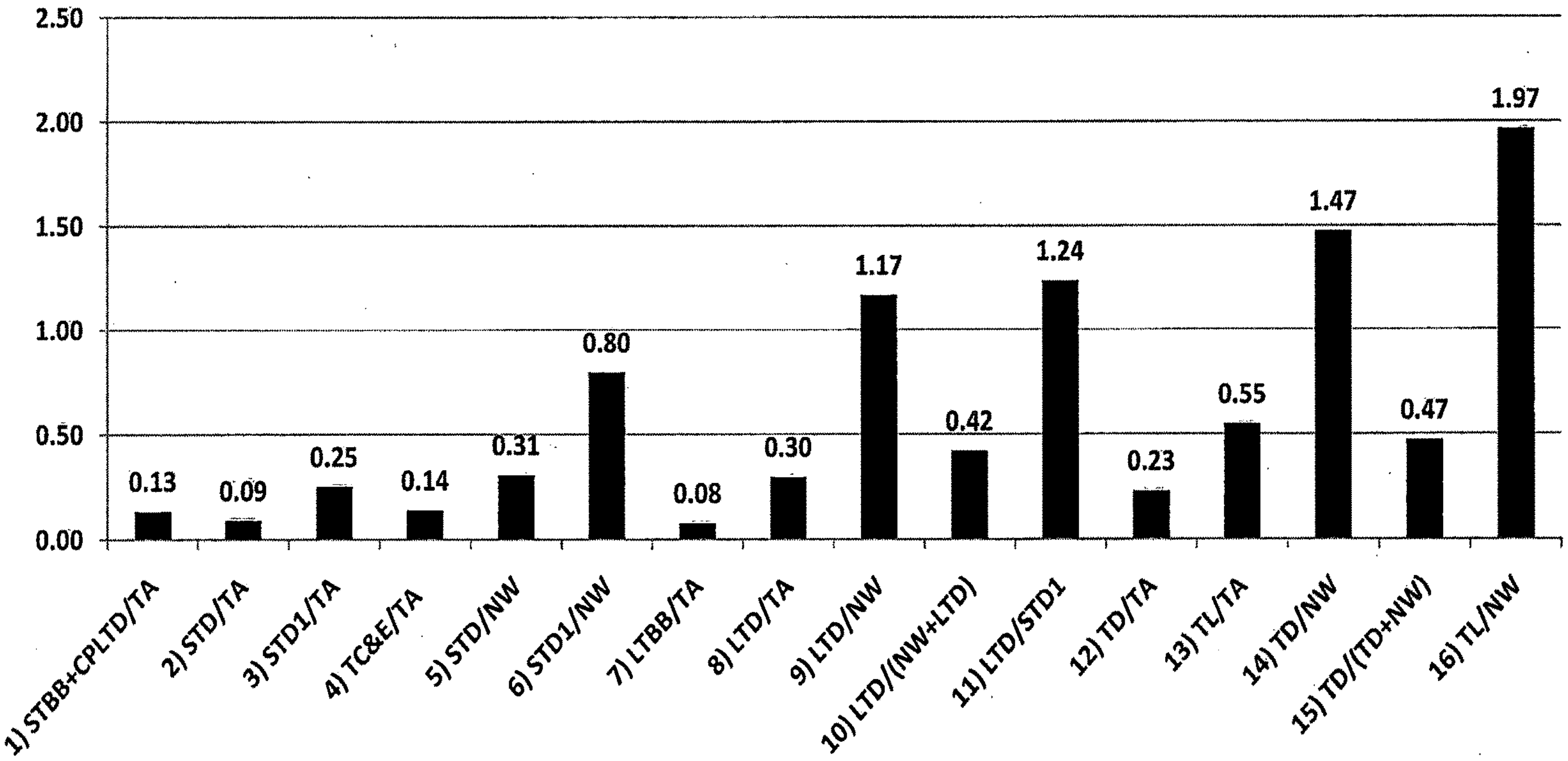


Table 4.10.1

Mean Debt Ratios by Year (Textiles Industry-3 Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.16	0.16	0.18	0.19	0.13	0.15	0.13	0.17	0.14	0.10	0.13	0.12	0.13	0.11	0.10	0.10	0.10	0.11	**0.13**
2	STD/TA	0.14	0.13	0.17	0.17	0.10	0.11	0.08	0.10	0.09	0.07	0.05	0.05	0.07	0.05	0.06	0.05	0.06	0.06	**0.09**
3	STD1/TA	0.33	0.31	0.36	0.30	0.22	0.27	0.21	0.23	0.24	0.25	0.23	0.21	0.24	0.22	0.24	0.22	0.21	0.24	**0.25**
4	TC&E/TA	0.17	0.16	0.17	0.12	0.09	0.14	0.12	0.11	0.14	0.16	0.16	0.14	0.15	0.13	0.15	0.14	0.13	0.15	**0.14**
5	STD/NW	0.49	0.65	0.60	0.53	0.23	0.32	0.23	0.31	0.34	0.27	0.15	0.15	0.22	0.14	0.20	0.16	0.24	0.29	**0.31**
6	STD1/NW	1.09	1.27	1.22	0.94	0.46	0.74	0.56	0.66	0.86	0.86	0.71	0.60	0.83	0.62	0.67	0.60	0.76	0.92	**0.80**
7	LTBB/TA	0.10	0.04	0.03	0.02	0.03	0.03	0.05	0.05	0.04	0.03	0.08	0.08	0.09	0.15	0.14	0.12	0.15	0.17	**0.08**
8	LTD/TA	0.32	0.38	0.30	0.26	0.30	0.30	0.34	0.34	0.34	0.32	0.31	0.27	0.24	0.23	0.24	0.24	0.30	0.32	**0.30**
9	LTD/NW	1.04	1.72	1.09	0.97	0.78	0.97	1.08	1.22	1.68	1.62	1.48	1.13	1.02	0.79	0.82	0.76	1.30	1.56	**1.17**
10	LTD/(NW+LTD)	0.48	0.55	0.48	0.39	0.37	0.41	0.43	0.44	0.44	0.42	0.40	0.39	0.38	0.36	0.37	0.35	0.44	0.46	**0.42**
11	LTD/STD1	1.02	1.35	0.86	0.77	1.59	1.13	1.62	1.54	1.42	1.37	1.43	1.41	0.88	0.96	0.97	0.97	1.47	1.48	**1.24**
12	TD/TA	0.33	0.41	0.37	0.27	0.29	0.28	0.29	0.27	0.24	0.23	0.22	0.17	0.15	0.13	0.11	0.11	0.13	0.14	**0.23**
13	TL/TA	0.64	0.69	0.66	0.56	0.52	0.58	0.55	0.57	0.58	0.57	0.55	0.48	0.48	0.45	0.48	0.45	0.51	0.56	**0.55**
14	TD/NW	1.52	2.37	1.69	1.50	1.01	1.29	1.31	1.53	2.02	1.89	1.63	1.28	1.24	0.93	1.02	0.92	1.55	1.85	**1.47**
15	TD/(TD+NW)	0.56	0.62	0.58	0.49	0.44	0.49	0.48	0.50	0.48	0.45	0.44	0.42	0.43	0.39	0.40	0.39	0.46	0.48	**0.47**
16	TL/NW	2.12	2.99	2.31	1.90	1.24	1.71	1.63	1.88	2.54	2.49	2.19	1.73	1.84	1.41	1.49	1.36	2.06	2.48	**1.97**

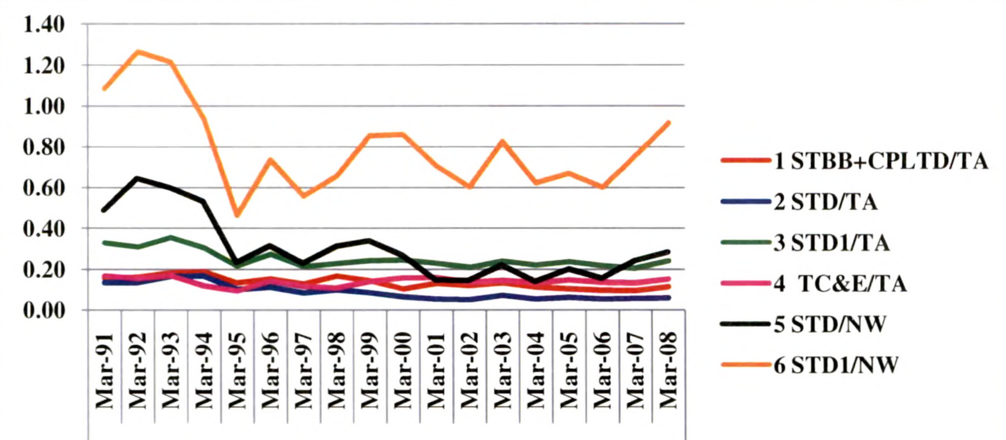


Figure 4. 10 .1 Short Term Debt Ratios by Year (Textiles Industry- 3 FDI Companies)

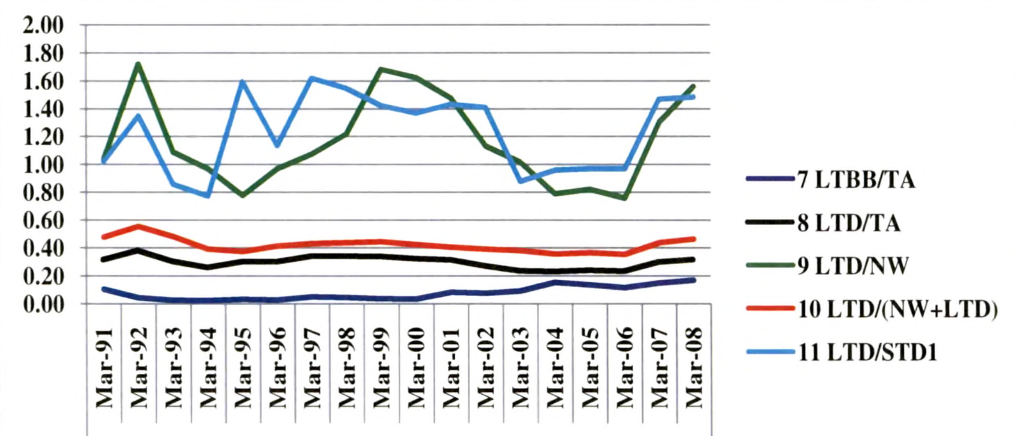


Figure 4.10.2 Long Term Debt Ratios by Year(Textile Industry- 3 FDI Companies)

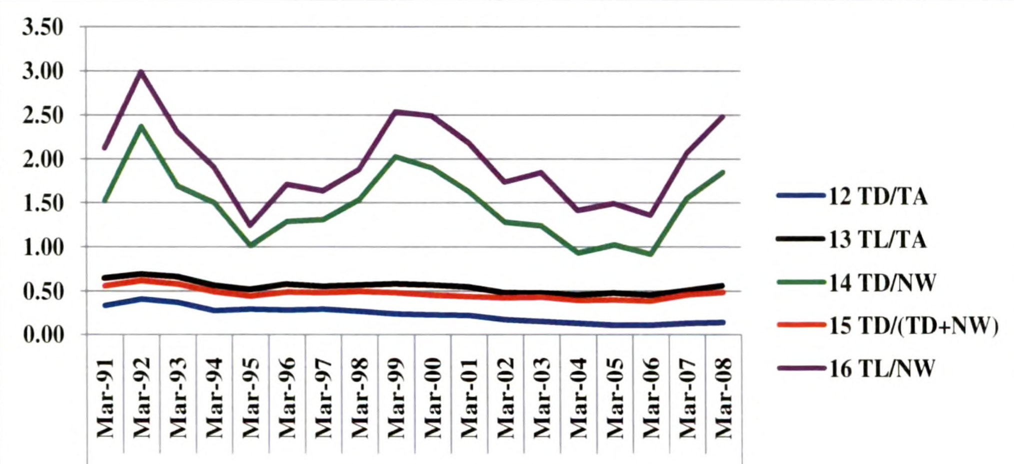


Figure 4.10.3 Total Debt Ratios by Year (Textile Industry - 3 FDI Companies)

Table 4.10.1 and Figure 4.10.1 indicated that STD1/NW ratio showed wide fluctuations during the study period with a decline in the year 1995 to a gradual rise in the year 2008. This was due to sudden increase in Net worth of the sample companies in Textile industry in the year 1995, without corresponding equivalent increase in short term debt. Similar fluctuations were observed in the Long Term Debt ratios and Total Debt Ratios which were scaled down to Net worth, indicating shift in preferences of financing mix over the study period. The Net worth of sample companies in Textile industry did not indicate a steady increase and proportion of Long Term Debt in financing of assets seemed to be reduced in the years 2003, 2004 and 2005 (Figure 4.10.4). Hence the ratio LTD/NW indicated wide fluctuations. Similar trends were also observed in LTD/STD1 ratio, as the Short Term Debt to Long Term Debt mix kept on changing throughout the study period (Figure 4.10.4). All other short term, Long Term and Total Debt Ratios remained stable during the study period.

Figure 4.10.4 indicated increase in preference for owner's funds from 36% in the year 1991 to 44% in the year 2008. The proportion of Long Term Debt in financing of assets declined in years 2002-2006 and again increased in the years 2007 and 2008. Preference for Short Term Debt funds also kept on fluctuating but generally showed a declining trend in Textiles industry.

4.3.10 Trends in Capital Structure of Construction Industry

The aggregate Debt ratios in Table 4.12 indicate that Long Term Debt as a proportion to Net worth is 87%. Long Term Debt contributes only 30% towards capital employed as indicated by LTD/NW+ LTD ratio. The TL/NW ratio reveals that outsider's funds are 2.85 times the Owner's Funds out of which Short Term Debt funds are 1.98 times which means 69% of Total Liabilities are made up of Short Term Debt funds. Out of Total Liabilities financing 67% of Total Assets (TL/TA ratio), Trade Credits and Equivalents contribute 35% indicating that Trade Credit is a very important source of finance for Construction industry. Long Term Debt contributes 22% towards financing of assets as indicated by LTD/TA ratio. In Construction industry also TL/TA ratio seems to be the most representative measure of leverage with COV minimum at 11.56%.

Figure 4.10.4 - Financing Mix Adopted by Textiles Industry - 3 FDI Companies (1991-2008)

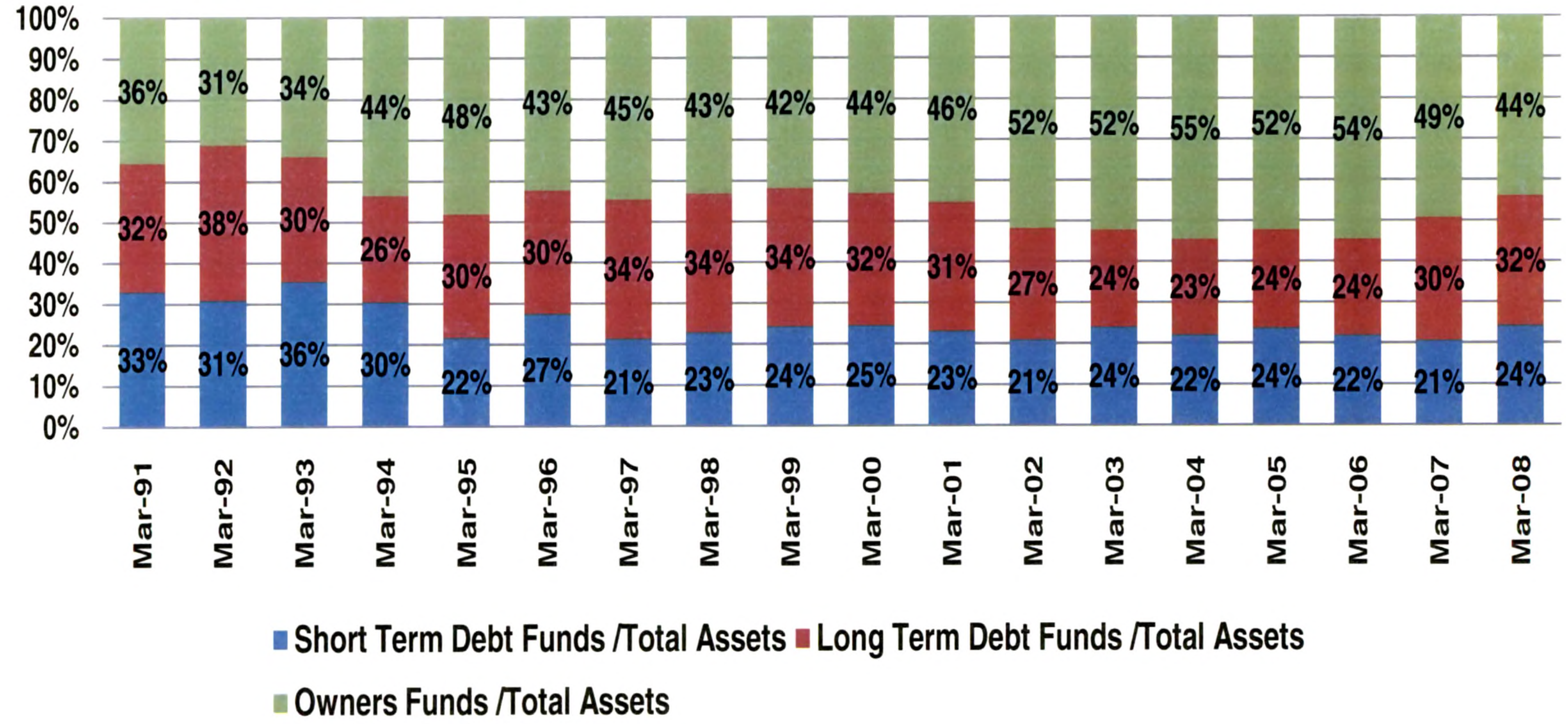


Table 4.12					
Aggregate Debt Ratios of Construction Industry (2 FDI Companies, 1991-2008)					
Sr. No	Debt Ratios	Mean	Median	SD	COV
1	STBB+CPLTD/TA	0.07	0.07	0.03	35.33
2	STD/TA	0.07	0.07	0.03	50.19
3	STD1/TA	0.45	0.45	0.37	82.89
4	TC&E/TA	0.35	0.35	0.33	95.11
5	STD/NW	0.32	0.32	0.26	81.34
6	STD1/NW	1.98	1.98	1.89	95.71
7	LTBB/TA	0.10	0.10	0.13	137.81
8	LTD/TA	0.22	0.22	0.29	132.32
9	LTD/NW	0.87	0.87	1.12	129.41
10	LTD/(NW+LTD)	0.30	0.30	0.34	114.36
11	LTD/STD1	0.02	1.80	2.52	11556.83
12	TD/TA	0.29	0.29	0.26	90.50
13	TL/TA	0.67	0.67	0.08	11.56
14	TD/NW	1.19	1.19	0.87	73.16
15	TD/(TD+NW)	0.38	0.32	0.36	96.59
16	TL/NW	2.85	2.85	0.77	26.94

The Table 4.12.1 and Figures 4.11.1, 4.11.2 and 4.11.3 indicate that there were wide fluctuations in the financing mix adopted by sample companies of Construction industry during the study period. Average STD1/NW ratio varied from 1.03 times in the year 1991 to .86 times in the year 2008, even going up to 4.09 times in the year 2006. This was due to very low Net worth of ITD Cementation India Ltd in the year 2006. A noticeable spike was observed in the year 1992 in the LTD/NW ratio which was due to Aban Offshore Ltd. which had borrowed heavily from Long Term Debt funds in that year. As there was no proportionate increase in Net worth of the company, the average LTD/NW ratio indicated a sudden rise. Similar fluctuations were seen in TD/NW and TL/NW ratios. Other Debt ratios were relatively stable throughout the study period.

From Figure 4.11.4, wide fluctuations in the financing mix were observed. The proportion of Long Term Debt in financing mix of Construction industry was reduced to 13% in the year 1995 and 1996 from 22% in the year 1991. It seems that temporarily, the financing requirements were met through Short Term Debt funds as the proportion of Short Term Debt funds in financing mix increased up to 63% in the year 1995 and 1996 from 40% in the year 1991.

Figure 4.11

Mean Debt Ratios of Construction Industry (2 FDI Companies:1991-2008)

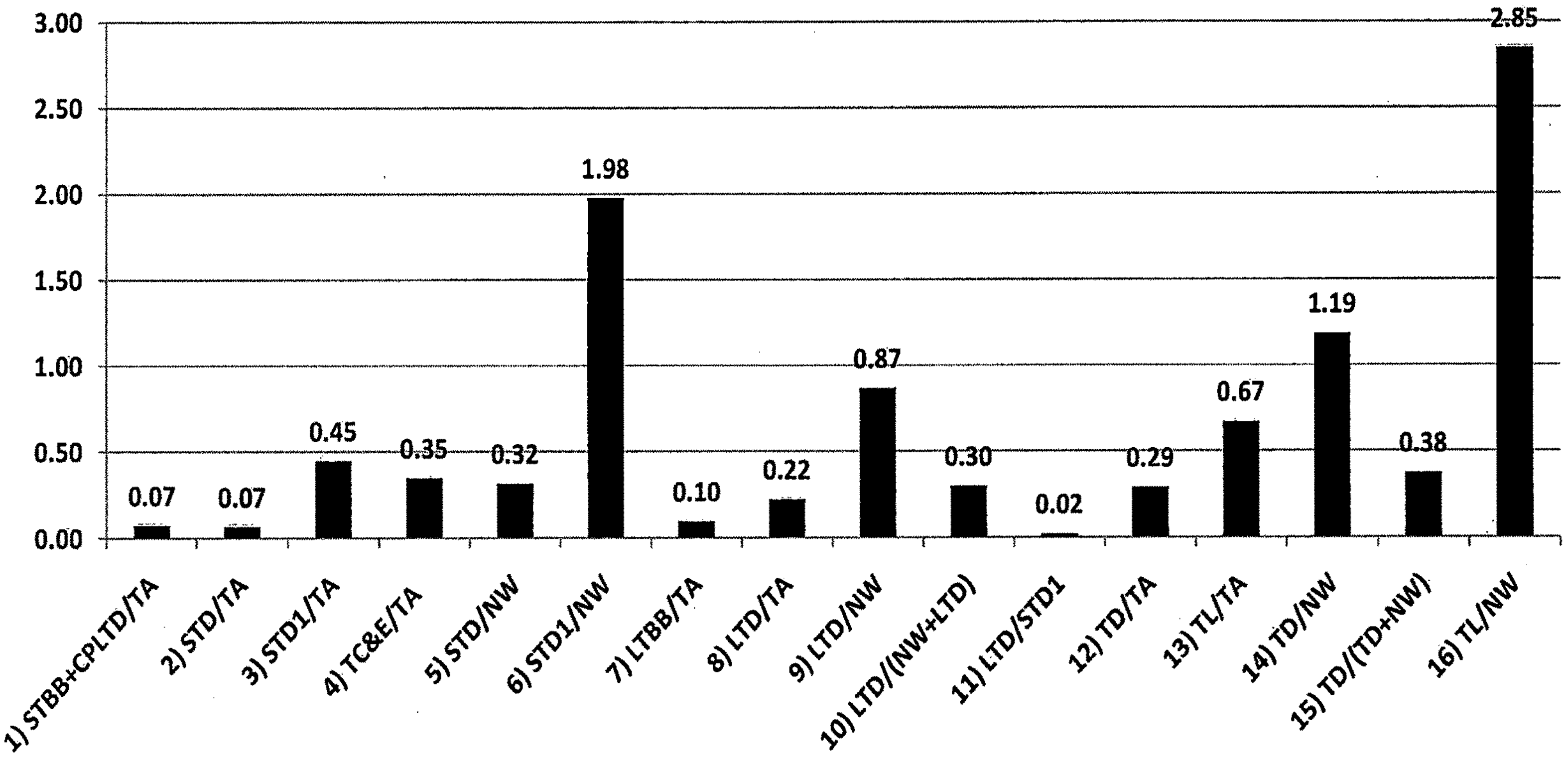


Table 4.12.1

Mean Debt Ratios by Year (Construction Industry-2 Companies)

	Debt Ratios	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mean 1991-2008
1	STBB+CPLTD/TA	0.12	0.04	0.01	0.03	0.01	0.03	0.05	0.04	0.10	0.07	0.07	0.05	0.02	0.04	0.01	0.04	0.01	0.27	0.06
2	STD/TA	0.10	0.05	0.02	0.01	0.08	0.09	0.10	0.08	0.04	0.06	0.06	0.03	0.03	0.06	0.06	0.16	0.10	0.07	0.07
3	STD1/TA	0.40	0.39	0.41	0.46	0.63	0.63	0.48	0.48	0.41	0.42	0.39	0.46	0.39	0.43	0.42	0.50	0.43	0.34	0.45
4	TC&E/TA	0.27	0.32	0.37	0.40	0.52	0.51	0.37	0.37	0.34	0.32	0.28	0.33	0.34	0.33	0.33	0.31	0.30	0.25	0.35
5	STD/NW	0.28	0.28	0.06	0.03	0.35	0.44	0.47	0.41	0.08	0.14	0.13	0.11	0.11	0.26	0.44	1.29	0.63	0.18	0.32
6	STD1/NW	1.03	1.69	1.29	2.18	2.72	2.92	2.51	2.61	1.12	1.06	0.87	1.63	1.58	1.84	3.01	4.09	2.58	0.86	1.98
7	LTBB/TA	0.07	0.03	0.03	0.01	0.01	0.01	0.05	0.03	0.02	0.01	0.01	0.07	0.31	0.23	0.33	0.21	0.15	0.17	0.10
8	LTD/TA	0.22	0.38	0.27	0.20	0.13	0.13	0.23	0.16	0.13	0.11	0.14	0.24	0.31	0.23	0.37	0.25	0.29	0.25	0.22
9	LTD/NW	0.72	4.07	0.78	0.41	0.51	0.47	0.60	0.32	0.22	0.19	0.25	1.06	1.24	0.65	1.83	0.75	0.92	0.66	0.87
10	LTD/(NW+LTD)	0.30	0.46	0.31	0.22	0.25	0.24	0.32	0.22	0.15	0.14	0.17	0.34	0.36	0.28	0.54	0.32	0.42	0.35	0.30
11	LTD/STD1	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.01	0.06	0.17	0.02
12	TD/TA	0.32	0.43	0.28	0.21	0.21	0.22	0.32	0.24	0.16	0.17	0.20	0.27	0.34	0.29	0.43	0.40	0.39	0.32	0.29
13	TL/TA	0.62	0.77	0.67	0.66	0.76	0.76	0.71	0.64	0.54	0.53	0.52	0.71	0.70	0.66	0.79	0.74	0.72	0.59	0.67
14	TD/NW	1.00	4.35	0.84	0.43	0.85	0.91	1.07	0.73	0.30	0.33	0.39	1.17	1.35	0.91	2.27	2.04	1.55	0.84	1.19
15	TD/(TD+NW)	0.54	0.53	0.50	0.43	0.40	0.39	0.36	0.36	0.35	0.33	0.37	0.26	0.41	0.28	0.40	0.18	0.22	0.45	0.38
16	TL/NW	1.75	5.76	2.08	2.58	3.23	3.38	3.11	2.93	1.34	1.25	1.12	2.69	2.82	2.50	4.84	4.84	3.50	1.51	2.85

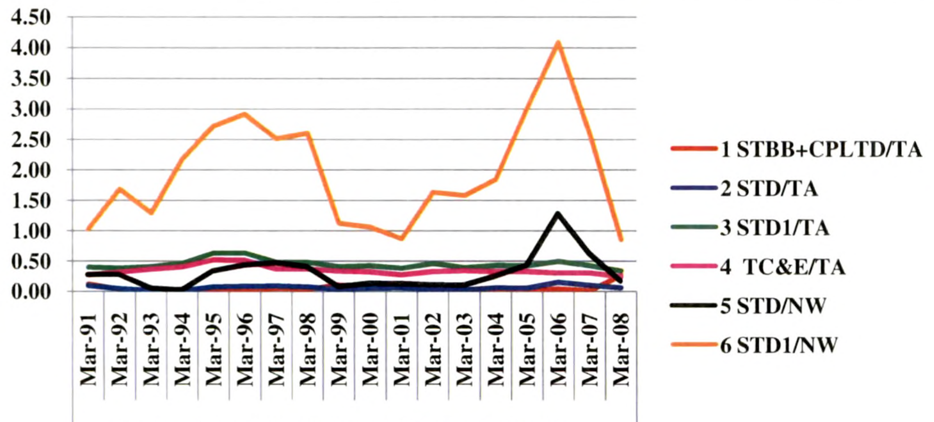


Figure 4. 11 .1 Short Term Debt Ratios by Year (Construction Industry- 2 FDI Companies)

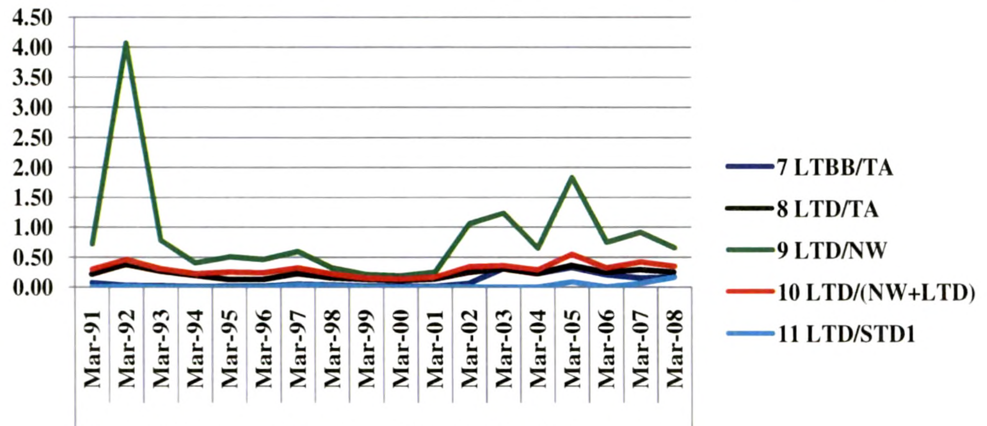


Figure 4.11.2 Long Term Debt Ratios by Year(Construction Industry- 2 FDI Companies)

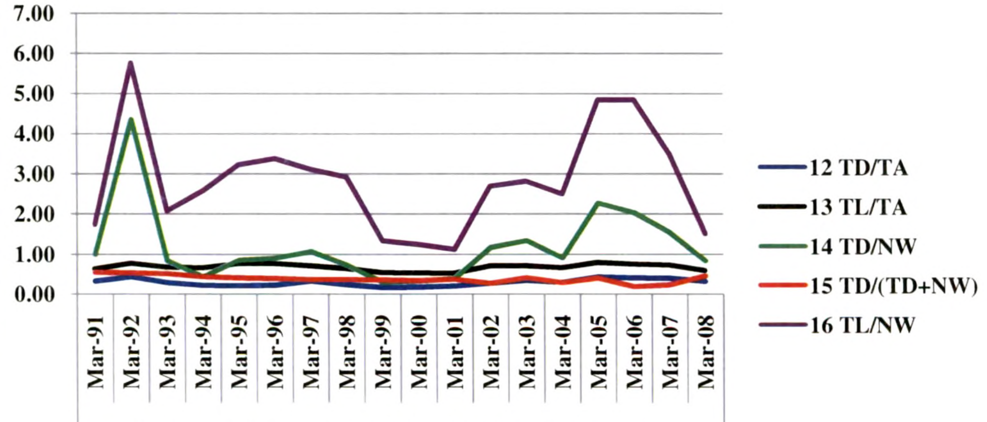
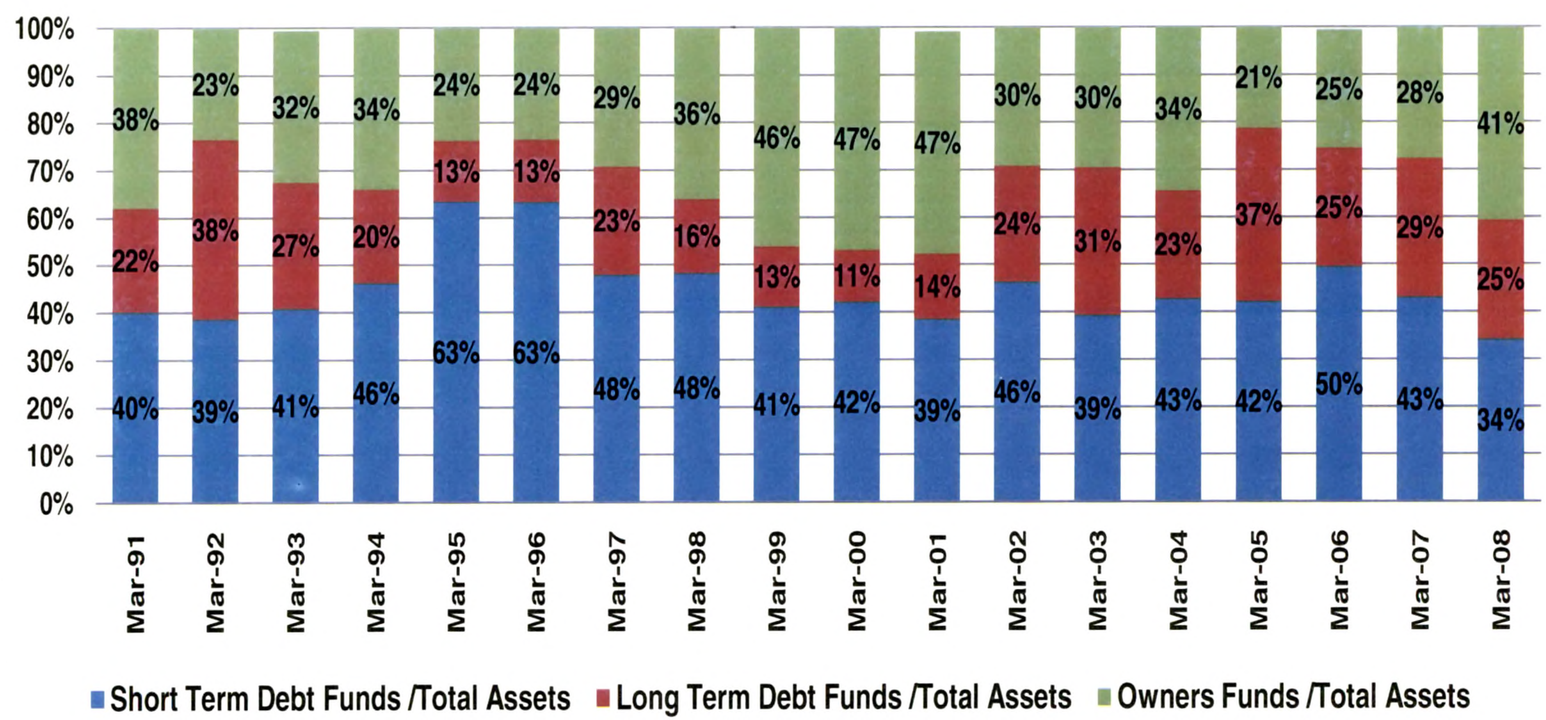


Figure 4.11.3 Total Debt Ratios by Year (Construction Industry - 2 FDI Companies)

Figure 4.11.4 - Financing Mix Adopted by Construction Industry - 2 FDI Companies (1991-2008)



4.4 Conclusion: Trend Analysis

This chapter examines the Trends in Capital Structure of FDI Companies in India. The major findings of trend analysis of Capital Structure of FDI Companies in India are:

I - Time Trends

1. The study rejects the null hypotheses that no significant linear trend is observed in Debt ratios of FDI Companies over a period of time and that the Debt ratios of FDI Companies do not change with passage of time and accepts the alternative hypotheses that significant linear or quadratic (curvilinear) trends are observed in Debt ratios of FDI Companies in India.

2. The study rejects the null hypothesis that no significant linear trend is observed in industry-wise Debt ratios of FDI Companies over a period of time and that the industry-wise Debt ratios of FDI Companies do not change with passage of time and accepts the alternative hypotheses that significant linear or quadratic (curvilinear) trends are observed in industry-wise Debt ratios of FDI Companies over a period of time.

3. To study the Time Trends in Capital Structure for the overall sample of 140 FDI Companies, the 'Method of Least Squares' is applied. First Linear Trend Model (Table 4.2.6-The simple linear regression) was run. On examining 'D' statistics, need was felt to apply quadratic equation and hence Quadratic Trend Model (4.2.7) was also applied. Time trend analysis revealed that some Debt ratios exhibited linear trend. They are STBB+CPLTD/TA(-ve), STD/TA (-ve), STD/NW (-ve), LTBB/TA (+ve), and LTD/(NW+LTD) (-ve). The ratios in which Quadratic trend model fitted the best are STD1/TA, TC&E/TA, STD1/NW, LTD/NW, TL/TA, TD/NW, TD/(TD+NW), TL/NW. The quadratic trend indicated that these Debt ratios are decreasing at an increasing rate. The Debt ratios LTD/TA and TD/TA decrease at an increasing rate, however the problem of autocorrelation persists as the 'D' statistic of LTD/TA ratio lies below the lower critical value and the D' statistic of TD/TA ratio lies in the inconclusive area.

4. For studying industry-wise time trends, five major industry groups are selected- Chemical Industry, Food Industry, Machinery Industry, Services industry and Transport Industry. The industry-wise time trends observed are summarized as follows:

Table 4.13 Industry-Wise Results of Time Trends	
LINEAR TREND	
Industry	**Debt Ratios**
Food	STD/NW(-ve), LTD/(NW+LTD)(-ve), TD/NW(-ve) and TD/(TD+NW) (-ve)
Chemicals	TC&E/TA (-ve) and LTD/NW (-ve)
Machinery	STD/TA(-ve), STD1/NW(-ve), LTBB/TA(-ve), LTD/NW(-ve), TD/NW (-ve), TD/(TD+NW) (-ve).
Transport	STBB+CPLTD/TA (-ve), STD/TA (-ve) and STD1/TA (-ve)
Services	STD/TA (-ve)
QUADRATIC TREND	
Industry	**Debt Ratios**
Food	STD1/TA, TC&E/TA and TL/TA
Chemicals	STBB+CPLTD/TA, STD/TA, STD/NW, STD1/NW, LTD/TA, LTD/(NW+LTD), TD/TA, TD/NW, TD/(TD+NW) and TL/NW
Machinery	STD1/TA, TC&E/TA, STD/NW, TD/TA, TL/TA and TL/NW.
Transport	TC&E/TA, TD/TA, TL/TA, TD/(TD+NW) and TL/NW.
Services	STBB+CPLTD/TA, STD1/TA and TC&E/TA
NO TREND	
Industry	**Debt Ratios**
Food	STBB+CPLTD/TA, STD/TA, LTBB/TA, LTD/NW and TD/TA
Chemicals	LTBB/TA
Machinery	STBB+CPLTD/TA and LTD/(NW+LTD)
Transport	STD/NW, STD1/NW, LTD/NW, LTBB/TA, LTD/(NW+LTD) and TD/NW.
Services	STD/NW, STD1/NW, LTBB/TA, LTD/TA, LTD/NW, LTD/(NW+LTD), TD/TA, TD/NW, TD/(TD+NW) and TL/NW

Ratios Decreasing at an Increasing Rate but Problem of Autocorrelation Persists	
Industry	**Debt Ratios**
Food	STD1/NW, TL/NW
Chemicals	STD1/TA and TL/TA
Machinery	LTD/TA
Transport	LTD/TA
Services	TL/TA

II- Overall and Industry-wise Trends in Capital Structure

5. FDI Companies in India resort to low debt levels in their Capital Structure. During the initial years of liberalization in 1991 and 1992, the debt levels seem to be high and then show a continuous declining trend (Table 4.2.1). There has been a marked decline in preference of Long Term Debt Funds as Long Term Debt ratios have shown a significant decline throughout the study period (Figure 4.1.4). Even Long Term Debt ratios in various industries show a similar declining trend indicating that preference for Long Term Debt in the Capital Structure of FDI Companies in India has declined over the study period.

6. A major proportion of Total Liabilities (Table 4.2.4) consist of Short Term Debt Funds which include Short Term Bank Borrowings, Commercial Paper and Current Liabilities & Provisions. In Short Term Debt Funds, Current Liabilities & Provisions are the most dominant and the most preferred source of finance and contribute a major proportion towards financing mix adopted by FDI Companies in India. Commercial paper contributes a negligible proportion towards Short Term Debt Funds. It was observed that although STD = Short Term Bank Borrowings + Commercial paper , the contribution of commercial paper towards Short Term Debt Funds is negligible.

7. The average composition of Owner's Funds of FDI Companies (Table 4.2.2) indicates that the proportion of Internal Funds in the form of Reserves &

Surplus have shown a marked increase over the study period, whereas the proportion of Share Capital in Owner's Funds has declined over the study period indicating that these companies must be profitable companies with high Retention Ratios. The average Retention Ratios prove the fact that indeed FDI Companies have very high Retention Ratios (Table 4.2.5).

8. FDI Companies in India believe in using more of internally generated funds rather than externally generated funds to finance their investments and prefer Short Term Debt over Long Term Debt, then use Long Term Debt to finance their long term assets and do not prefer to issue additional equity to raise finance. This seems to be characteristic feature of FDI Companies in India, which in turn might be making them an attractive FDI destination companies.

9. An important point to be noted was that, although some of the Debt ratios indicated a declining trend, other than Long Term Debt funds, the proportion of Short Term Debt Funds in financing mix of assets seemed to be more or less constant through the study period (Figure 4.1.4). Short Term Debt ratios scaled down to Total Assets did not indicate significant fluctuations, but Short Term Debt ratios scaled down to Net worth indicated a considerable decline. This was for the reason that the contribution of Owners' Funds (Table 4.2.2) towards financing assets had significantly increased during the study period. Since Owner's Funds i.e. Net worth of these companies increased during the study period, those Debt ratios which were scaled down to Net worth indicated a significant decline. In case of Long Term Debt ratios, the use of Long Term Debt had considerably declined during the study period and hence all these ratios indicated a general decline.

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References

[1] Levine, Krehbiel & Berenson (2003), *Business Statistics- A First Course*, Third edition, Pearson Education, ISBN- 81-297-0410-2

[2] Gupta S.P,(2005), "*Statistical Methods*", Thirty fourth Edition, ISBN 81-8054-298-X, Sultan Chand & Sons, Educational Publishers , New Delhi

CHAPTER-5

DETERMINANTS OF CAPITAL STRUCTURE AT FIRM LEVEL: AN EMPIRICAL ANALYSIS

CHAPTER CONTENTS

Chapter-5 Contents (Continued.....)

CHAPTER - 5

DETERMINANTS OF CAPITAL STRUCTURE AT FIRM LEVEL: AN EMPIRICAL ANALYSIS

In this chapter, empirical analysis at firm level is undertaken to identify the Determinants of Capital Structure of FDI Companies in India. This chapter is divided into two parts: In PART- I, Simple Linear Regressions of various measures of Capital Structure (Debt Ratios) on each individual indicator of an independent variable are conducted. In PART - II, Multiple Regression Analysis of each Debt measure is conducted on the selected Determinants of Capital Structure to study the impact of various Determinants on Capital Structure and to examine the impact of these Determinants on Capital Structure of selected sample of FDI Companies in India. An attempt is also made to relate the results with established Capital Structure theories applicable to the selected sample of companies.

PART - I

SIMPLE REGRESSIONS OF VARIOUS MEASURES OF CAPITAL STRUCTURE

5.1 Results of Simple Regression

In this first stage of empirical analysis at firm level, simple linear regressions of various measures of Capital Structure (Debt Ratios) on each indicator of an independent variable are conducted. The results will point out the indicators of independent variables which are having significant impact on Debt Ratios.

5.1.1 Results of Simple Regressions on STBB+CPLTD/TA Ratio

In Table 5.1, results of simple linear regression of STBB+CPLTD/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. It is observed that Profitability indicators PBIT/TNA, PBITDA/TGA and PBT/TNA have significant negative impact on STBB+CPLTD/TA ratio with 't' statistic significant at 1% level of significance for all the three indicators.

Table 5.1							
Simple Linear Regression on Debt Ratio- STBB+CPLTD/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.004	0.127	-0.004	-0.756	0.451	0.571
	Log of GTFA	0.008	0.132	-0.006	-1.087	0.279	1.181
	Log of TNA	0.011	0.143	-0.007	-1.234	0.219	1.524
Profitability	PBIT/TNA	0.121	0.175	-0.490	**-4.369****	**0.000**	**19.084**
	PBITDA/TGA	0.136	0.190	-0.581	**-4.663****	**0.000**	**21.745**
	PBT/TNA	0.220	0.166	-0.555	**-6.233****	**0.000**	**38.852**
	PBIT/Sales	0.000	0.106	-0.001	-0.067	0.947	0.005
	PBIT/CE	0.012	0.122	-0.064	-1.305	0.194	1.702
Collateral	NFA/TNA	0.002	0.115	-0.028	-0.555	0.580	0.308
	GFA/TGA	0.001	0.113	-0.017	-0.349	0.727	0.122
	(Nfa+Inv+AR)/TNA	0.139	-0.113	0.274	**4.723****	**0.000**	**22.309**
	L&B/TGA	0.002	0.109	-0.043	-0.525	0.601	0.275
	P&E/TGA	0.007	0.109	-0.004	-0.980	0.329	0.961
	INV/TNA	0.076	0.051	0.278	**3.373****	**0.001**	**11.376**
Volatility	SD of PBIT	0.028	0.113	0.00E+00	**-2.002***	**0.047**	**4.008**
	SD of % change in PBIT	0.000	0.106	-3.60E-07	-0.046	0.963	0.002
	SD of PBITDA/TGA	0.046	0.079	0.413	**2.586****	**0.011**	**6.688**
	COV of PBIT	0.008	0.104	0.001	1.058	0.292	1.119
	COV of PBIT/ CE	0.000	0.106	0.000	-0.128	0.898	0.016
	COV of PBIT/TNA	0.131	0.086	0.027	**4.571****	**0.000**	**20.893**
Growth rate	CAGR of TNA	0.047	0.141	-0.250	**-2.603****	**0.010**	**6.775**
	CAGR of sales	0.015	0.123	-0.123	-1.430	0.155	2.045
NDTS	Depr/TGA	0.013	0.131	-0.944	-1.358	0.177	1.843
	Depr+ET/TGA	0.009	0.114	-0.065	-1.120	0.265	1.255
	Depr/PBITDA	0.002	0.105	0.003	0.477	0.634	0.228
Debt Service capacity	PBDIT/INT	0.025	0.110	-3.00E-05	-1.896	0.06	3.586
Age	Age as on 31/03/2008	0.006	0.122	0.000	-0.892	0.374	0.796
	Log of age of firm	0.003	0.151	-0.013	-0.677	0.499	0.459
Dividend payout	Equity Div/PAT	0.010	0.116	-0.033	-1.159	0.248	1.344
Liquidity	CA/CL	0.004	0.117	-0.004	-0.757	0.45	0.573
Net Exports	Net exp/Sales	0.001	0.105	-0.017	-0.442	0.659	0.195
Cost of Equity	DIV/SC	0.073	0.132	-0.435	**-3.308****	**0.001**	**10.942**
Uniqueness	R&D/Sales	0.001	0.107	-0.183	-0.315	0.753	0.099
Cost of Borrowing	INT/DEBT	0.007	0.122	-0.120	-0.982	0.328	0.965
*** indicates significance at 5% level**							
**** indicates significance at 1% level**							

The R^2 value of PBT/TNA indicates that profitability factor is able to explain 22% variations in the STBB+CPLTD/TA ratio. (Nfa+Inv+AR)/TNA has significant positive impact on STBB+CPLTD/TA ratio, and is able explain almost 14% variation in the ratio. Even INV/TNA has significant positive impact on STBB+CPLTD/TA ratio. This indicates that along with Net Fixed Assets, Inventory and Accounts Receivables also determine the level of Short Term Bank Borrowings and ability to pay Long Term Debt. SD of PBITDA/TGA and COV of PBIT/TNA both have positive impact on STBB+CPLTD/TA ratio, the't' statistic significant at 1% level of significance indicating that Volatility has positive impact on Short Term Bank Borrowings.

Growth rate has negative impact on STBB+CPLTD/TA ratio, as CAGR of TNA has got negative coefficient, significant at 1% level of significance which shows consistency with results of Bevan & Danbolt (2000)[1]. They also had found that companies with high levels of growth opportunities appear to be increasingly moving away from Short Term Bank Debt. Although the ratio has negative impact on Growth Rate, it does not indicate that high growth companies might not be resorting to long term debt as STBB+CPLTD/TA includes a proportion of Long Term Debt to be paid in a year. Cost of Equity has negative impact on STBB+CPLTD/TA ratio indicating that with increase in Cost of Equity, preference for Short Term Bank Borrowings reduces. The't' statistic for indicators of Size, NDTS, Debt Service Capacity, Age, Dividend Payout, Liquidity, Net Exports, Uniqueness and Cost of Borrowings indicated insignificant impact on STBB+CPLTD/TA ratio.

5.1.2 Results of Simple Regressions on STD/TA Ratio

In Table 5.2, results of simple linear regression of STD/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Short Term Debt (STD) comprises of Short Term Bank Borrowings and Commercial Paper. From the results of simple regressions, it is observed that Log of sales and Log of GTFA have negative impact on STD/TA ratio which indicates that as the Size increases, company's dependence on Short Term Bank Borrowings decreases. This may also indicate that large Size companies may be in better position to obtain Long Term Debt finance and thus explaining the negative impact of Size on Short Term Debt. PBIT/TNA, PBITDA/TGA and PBT/TNA have negative impact on STD/TA ratio and are significant at 1% level of significance indicating that Profitable companies resort to lower levels of Short Term Bank

Borrowings. (Nfa+Inv+AR)/TNA and INV/TNA have positive impact on STD/TA ratio and are significant at 1% level of significance indicating that level of Inventories and Accounts Receivables act as Collaterals for receiving Short Term Bank Loans.

Table 5.2							
Simple Linear Regression on Debt Ratio- STD/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.013	0.115	-0.006	-1.368	0.173	1.872
	Log of GTFA	0.030	0.123	-0.008	**-2.061***	**0.041**	**4.249**
	Log of TNA	0.031	0.134	-0.009	**-2.091***	**0.038**	**4.374**
Profitability	PBIT/TNA	0.103	0.135	-0.344	**-3.974****	**0.000**	**15.790**
	PBITDA/TGA	0.118	0.146	-0.412	**-4.287****	**0.000**	**18.382**
	PBT/TNA	0.199	0.130	-0.404	**-5.850****	**0.000**	**34.228**
	PBIT/Sales	0.000	0.086	-4.80E-07	0.000	1.000	0.000
	PBIT/CE	0.006	0.095	-0.035	-0.921	0.359	0.849
Collateral	NFA/TNA	0.014	0.104	-0.054	-1.402	0.163	1.966
	GFA/TGA	0.010	0.106	-0.045	-1.194	0.234	1.426
	(Nfa+Inv+AR)/TNA	0.139	-0.081	0.209	**4.729****	**0.000**	**22.365**
	L&B/TGA	0.002	0.089	-0.032	-0.519	0.604	0.270
	P&E/TGA	0.009	0.089	-0.004	-1.088	0.278	1.184
	Inventories/TNA	0.098	0.038	0.240	**3.864****	**0.000**	**14.927**
Volatility	SD of PBIT	0.042	0.093	0.00E+00	**-2.473***	**0.015**	**6.115**
	SD of % change in PBIT	0.000	0.086	-9.40E-07	-0.159	0.874	0.025
	SD of PBITDA/TGA	0.015	0.074	0.182	1.465	0.145	2.146
	COV of PBIT	0.003	0.085	0.000	0.647	0.518	0.419
	COV of PBIT/CE	0.003	0.086	-0.001	-0.613	0.541	0.376
	COV of PBIT/ TNA	0.075	0.075	0.016	**3.344****	**0.001**	**11.182**
Growth rate	CAGR of TNA	0.031	0.108	-0.155	**-2.091***	**0.038**	**4.371**
	CAGR of sales	0.008	0.095	-0.068	-1.029	0.305	1.059
NDTS	Depr/TGA	0.026	0.114	-1.021	-1.935	0.055	3.746
	Depr+ET/TGA	0.012	0.093	-0.058	-1.314	0.191	1.727
	Depr/PBITDA	0.001	0.085	0.002	0.425	0.672	0.180
Debt Service capacity	PBDIT/INT	0.029	0.090	-2.50E-05	**-2.026***	**0.045**	**4.106**
Age	Age as on 31/03/2008	0.005	0.097	0.000	-0.807	0.421	0.652
	Log of age of firm	0.003	0.119	-0.009	-0.648	0.518	0.419
Dividend payout	Equity Div/PAT	0.022	0.098	-0.039	-1.770	0.079	3.312
Liquidity	CA/CL	0.001	0.090	-0.001	-0.370	0.712	0.137
Net Exports	Net exp/Sales	0.001	0.086	-0.008	-0.283	0.777	0.080
Cost of Equity	DIV/SC	0.078	0.107	-0.343	**-3.427****	**0.001**	**11.743**
Uniqueness	R&D/Sales	0.011	0.089	-0.550	-1.245	0.215	1.549
Cost of Borrowing	INT/DEBT	0.007	0.098	-0.092	-0.983	0.327	0.967
*** indicates significance at 5% level**							
**** indicates significance at 1% level**							

COV of PBIT/TNA has positive impact on STD/TA ratio indicating that Volatile earnings would mean more dependence on Short Term Bank Borrowings.

CAGR of TNA has negative impact on STD/TA and is significant at 5% level of significance which means that high growth companies resort to low level of Short Term Bank Borrowings. PBDIT/INT has negative impact on STD/TA indicating that the companies having high Debt Servicing Capacity resort to lower Short Term Bank Borrowings. A significant negative coefficient of indicator of Cost of Equity shows that as Cost of Equity increases, companies prefer lower levels of Short Term Bank Borrowings. It might be possible that profitable companies may be declaring high dividends as indicated by positive correlation coefficient between Profitability indicators and indicators of Cost of Equity (Table 5.24). These profitable companies might be having sufficient cash reserves and internally generated funds. These companies do not need external financing. Hence this might explain negative impact of Profitability and even Cost of Equity factor on STD/TA ratio. The't' statistic of indicators of NDTS, Age, Dividend payout, Net Exports, Uniqueness and Cost of Borrowings indicated insignificant impact on STD/TA ratio.

5.1.3 Results of Regression on STD1/TA Ratio

In Table 5.3, results of simple linear regression of STD1/TA (Debt Ratio) on each indicator of independent variable indicate that Log of GTFA has negative impact on the Short Term Debt Ratio (STD1/TA) indicating that greater the Size, lower will be the STD1/TA ratio and smaller the Size of a firm, greater would be reliance on Short Term Debt Funds. This result is consistent with Titman & Wessel's (1988)[2] who had found evidence that small firms tend to use significantly more short-term financing than large firms. PBITDA/TGA and PBT/TNA has significant negative impact on the debt ratio indicating that Pecking Order Theory is followed as profitable firms resort to low Short Term Debt levels in their Capital Structure. NFA/TNA and GFA / TGA have significant negative impact on STD1/TA ratio. The R^2 value of NFA / TNA indicates that 27% of the variations in STD1/TA ratio are explained by Collateral effect and R^2 value of GFA/TGA indicates that 24% of the variation in the Debt Ratio is explained. This means that firms having more fixed assets as collaterals will resort to lower Short Term Debt levels in their Capital Structure as they can resort to Long Term Debt funds if needed. It is also observed that INV/TNA has significant negative

Table 5.3							
Simple Linear Regression on Debt Ratio- STD1/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.007	0.350	0.008	0.962	0.338	0.925
	Log of GTFA	0.045	0.486	-0.021	**-2.549***	**0.012**	**6.496**
	Log of TNA	0.006	0.436	-0.009	-0.941	0.348	0.886
Profitability	PBIT/TNA	0.023	0.440	-0.339	-1.821	0.071	3.317
	PBITDA/TGA	0.037	0.461	-0.476	**-2.305***	**0.023**	**5.313**
	PBT/TNA	0.039	0.432	-0.366	**-2.360***	**0.020**	**5.568**
	PBIT/Sales	0.005	0.392	0.005	0.271	0.787	0.073
	PBIT/CE	0.025	0.355	0.144	1.871	0.063	3.500
Collateral	NFA/TNA	0.272	0.552	-0.489	**-7.181****	**0.000**	**51.562**
	GFA/TGA	0.241	0.593	-0.45	**-6.618****	**0.000**	**43.802**
	(Nfa+Inv+AR)/TNA	0.027	0.242	0.189	1.948	0.053	3.974
	L&B/TGA	0.023	0.412	-0.226	-1.785	0.076	3.188
	P&E/TGA	0.011	0.398	-0.009	-1.226	0.222	1.503
	Inventories/TNA	0.207	0.25	0.720	**6.009****	**0.000**	**36.113**
Volatility	SD of PBIT	0.004	0.396	-6.90E-05	-0.784	0.435	0.614
	SD of % change in PBIT	0.012	0.397	-1.60E-05	-1.287	0.200	1.656
	SD of PBITDA/TGA	0.049	0.349	0.670	**2.673****	**0.008**	**7.143**
	COV of PBIT	0.008	0.389	0.002	1.053	0.294	1.109
	COV of PBIT/CE	0.019	0.393	-0.005	-1.631	0.105	2.661
	COV of PBIT/ TNA	0.151	0.359	0.046	**4.954****	**0.000**	**24.544**
Growth rate	CAGR of TNA	0.063	0.457	-0.456	**-3.053****	**0.003**	**9.32**
	CAGR of sales	0.012	0.417	-0.179	-1.317	0.190	1.735
NDTS	Depr/TGA	0.119	0.513	-4.450	**-4.312****	**0.000**	**18.594**
	Depr+ET/TGA	0.044	0.420	-0.225	**-2.505***	**0.013**	**6.276**
	Depr/PBITDA	0.009	0.388	0.013	1.142	0.256	1.304
Debt Service capacity	PBDIT/INT	0.012	0.397	-3.30E-05	-1.315	0.191	1.731
Age	Age as on 31/03/2008	0.012	0.355	0.001	1.305	0.194	1.702
	Log of age of firm	0.01	0.264	0.035	1.205	0.230	1.452
Dividend payout	Equity Div/PAT	0.000	0.395	-0.011	-0.252	0.801	0.064
Liquidity	CA/CL	0.135	0.492	-0.033	**-4.637****	**0.000**	**21.504**
Net Exports	Net exp/Sales	0.045	0.387	-0.151	**-2.540***	**0.012**	**6.453**
Cost of Equity	DIV/SC	0.004	0.382	0.161	0.750	0.455	0.562
Uniqueness	R&D/Sales	0.033	0.402	-1.952	**-2.172***	**0.032**	**4.719**
Cost of Borrowing	INT/DEBT	0.050	0.325	0.505	**2.683****	**0.008**	**7.197**
*** indicates significance at 5% level**							
**** indicates significance at 1% level**							

impact on STD1/TA indicating that Inventories act as collaterals for obtaining Short Term Debt Funds. SD of PBITDA/TGA and COV of PBIT/TNA have positive impact on STD1/TA ratio indicating that companies having volatile incomes may resort to higher Short Term Debt levels in their Capital Structure. Indicators of Growth Rate have negative impact on STD1/TA ratio, CAGR/TNA being significant at 1% level, indicating support for Trade-off Theory.

NDTS indicators Depr/TGA and Depr+ET/TGA both have negative impact on STD1/TA assets ratio indicating that companies must be resorting to more Long Term Debt if needed as they increase their investments in fixed assets. Uniqueness indicator R&D / Sales was negatively related to STD1/TA indicating that it might be difficult for unique firms to obtain short term debt. These results were consistent with results of Titman & Wessel's (1988)[2], but the results were contrasting with results of Kakani (1999)[3] who found that uniqueness of firm had positive impact on Short Term Debt levels of firm.

INT/DEBT an indicator for Cost of Borrowing have positive impact on STD1/TA, significant at 1% level indicating that as Cost of Borrowing rises, FDI Companies resort to Short Term Debt to meet their financing needs. Net Exports have negative impact on STD1/TA ratio. The indicators of Debt service capacity, Age, Dividend payout, Cost of equity have insignificant impact on STD1/TA ratio as indicated by low't' statistic with high 'p' values.

5.1.4 Results of Simple Regression on TC&E/TA Ratio

In Table 5.4, results of simple linear regression of TC&E/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Trade Credit and Equivalents make up a significant portion of Short Term Debt (Table 4.2, Chapter - 4) and dependence on Trade Credit as a major source of finance seems to be a trend even in all sample industries selected in this study.

A look at the Size factor reveals that the indicator Log of sales has a positive impact on TC&E/TA ratio and is significant at 5% level of significance. This indicates that large size companies having greater sales are more dependent on Trade Credits and Equivalents, as it is necessary to meet the increasing demand for short term working capital requirements. Collateral indicators NFA/TNA and GFA/TGA had significant negative impact on TC&E/TA ratio. INV/TNA has positive impact on TC&E/TA ratio which means that higher inventory levels are maintained with the help of reliance on Trade Credits. All indicators of Profitability have significant negative

Table 5.4							
Simple Linear Regression on Debt Ratio- TC&E/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.037	0.162	0.015	**2.311***	**0.022**	**5.399**
	Log of GTFA	0.012	0.278	-0.009	-1.319	0.189	1.740
	Log of TNA	0.001	0.224	0.003	0.417	0.677	0.174
Profitability	PBIT/TNA	0.040	0.288	-0.345	**-2.402***	**0.018**	**5.770**
	PBITDA/TGA	0.050	0.302	-0.432	**-2.702****	**0.008**	**7.299**
	PBT/TNA	0.042	0.272	-0.297	**-2.453***	**0.015**	**6.017**
	PBIT/Sales	0.001	0.239	-4.00E-03	-0.315	0.753	0.099
	PBIT/CE	0.009	0.222	0.068	1.123	0.263	1.262
Collateral	NFA/TNA	0.239	0.356	-0.358	**-6.584****	**0.000**	**43.351**
	GFA/TGA	0.228	0.392	-0.341	**-6.378****	**0.000**	**40.685**
	(Nfa+Inv+AR)/TNA	0.023	0.130	0.137	1.817	0.071	3.300
	L&B/TGA	0.047	0.262	-0.255	**-2.622****	**0.010**	**6.877**
	P&E/TGA	0.001	0.241	-0.002	-0.368	0.713	0.136
	Inventories/TNA	0.176	0.137	0.518	**5.431****	**0.000**	**29.491**
Volatility	SD of PBIT	0.003	0.236	4.29E--005	0.627	0.532	0.393
	SD of % change in PBIT	0.008	0.242	-1.00E-05	-1.085	0.280	1.177
	SD of PBITDA/TGA	0.057	0.203	0.564	**2.895****	**0.004**	**8.380**
	COV of PBIT	0.010	0.237	0.001	1.186	0.238	1.405
	COV of PBIT/CE	0.027	0.240	-0.005	**-1.949***	**0.053**	**3.799**
	COV of PBIT/TNA	0.153	0.213	0.036	**5.000****	**0.000**	**25.002**
Growth rate	CAGR of TNA	0.061	0.289	-0.351	**-3.002***	**0.003**	**9011**
	CAGR of sales	0.012	0.258	-0.140	-1.318	0.190	1.737
NDTS	Depr/TGA	0.123	0.335	-3.535	**-4.400****	**0.000**	**19.357**
	Depr+ET/TGA	0.044	0.262	-0.177	**-2.530***	**0.013**	**6.400**
	Depr/PBITDA	0.017	0.235	0.013	1.528	0.129	2.335
Debt Service capacity	PBDIT/INT	0.008	0.242	-2.10E-05	-1.079	0.282	1.165
Age	Age as on 31-03-2008	0.029	0.194	0.001	2.048*	0.042	4.194
	Log of age of firm	0.025	0.085	0.042	1.883	0.062	3.544
Dividend payout	Equity Div/PAT	0.000	0.241	-0.006	-0.165	0.869	0.027
Liquidity	CA/CL	0.269	0.349	-0.037	**-7.128****	**0.000**	**50.802**
Net Exports	Net exp/Sales	0.067	0.234	-0.145	**-3.159****	**0.002**	**9.979**
Cost of Equity	DIV/SC	0.003	0.232	0.114	0.685	0.494	0.469
Uniqueness	R&D/Sales	0.030	0.247	-1.460	**-2.079***	**0.039**	**4.323**
Cost of Borrowing	INT/DEBT	0.095	0.166	0.546	**3.809****	**0.000**	**14.505**
*** indicates significance at 5% level**							
**** indicates significance at 1% level**							

impact on TC&E/TA ratio indicating that if there are sufficient cash flows generated due to high profitability, FDI Companies in India may resort to lower levels of Trade Credit. Two indicators of Volatility SD of PBITDA/TGA and COV of PBIT/TNA are significant at 1% level of significance and have positive impact on TC&E/TA ratio indicating that companies having volatile earnings do not lower their preference for Trade Credits as a mode of short term finance. Growth indicators CAGR of TNA is significant at 5% level of significance and has negative impact on TC&E/TA ratio indicating that firms with high growth rate in assets may be profitable firms as indicated by positive and significant correlation coefficient between CAGR of TNA and all indicators of profitability (Table 5.24). This might mean that firms having high growth rate are profitable firms having sufficient internally generated cash reserves to meet working capital requirements hence resort to lower levels of Trade Credit.

NDTS indicators have negative impact on TC&E/TA ratio indicating that increase in NDTS means increased investments in fixed assets which cannot be financed through short term funds, but can be financed only through long term debt funds or internally generated funds.

Age factor is significant at 5% level of significance and has positive impact on TC&E/TA ratio indicating mature firm's ability to avail easy short term credit facilities. But while interpreting the impact of Age factor on Debt Ratios, the sample data feature has to be kept in mind, since the sample data is for eighteen years (1991 to 2008) and the youngest age company in the sample is of 19 years and the oldest company is of 107 years with a median age of 39.5 years. Still we find positive impact of Age on TC&E/TA ratio which means that as the firm grows in age, its ability to avail Short Term Trade Credit increases.

Net Exports has negative impact on TC&E/TA ratio and is significant at 1% level of significance which indicated that net exporters do not resort to trade credit as they are already given lot of benefits such as EXIM credit facility and other export incentives and hence require less of trade credits. Unique firms might be facing difficulties in obtaining Trade Credit as indicated by significant negative coefficient of R&D/Sales. Cost of Borrowing indicator is significant at 1% level of significance and has positively impact on TC&E/TA ratio indicating that as cost of Long Term Debt Funds increase, FDI Companies resort to Short Term Trade Credit as a source of finance.

5.1.5 Results of Simple Regression on STD/NW Ratio

In Table 5.5, results of simple linear regression of STD/NW (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Size indicators - Log of GTFA and LOG of TNA have negative impact on STD/NW ratio which means that as the Size of a company increases, it's preference

Table 5.5							
Simple Linear Regression on Debt Ratio- STD/NW							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.019	0.553	-0.042	-1.629	0.106	2.655
	Log of GTFA	0.038	0.605	-0.060	**-2.348***	**0.020**	**5.515**
	Log of TNA	0.043	0.693	-0.070	**-2.496***	**0.014**	**6.229**
Profitability	PBIT/TNA	0.117	0.665	-2.316	**-4.267****	**0.000**	**18.207**
	PBITDA/TGA	0.127	0.728	-2.700	**-4.472***	**0.000**	**19.996**
	PBT/TNA	0.185	0.605	-2.456	**-5.592***	**0.000**	**31.267**
	PBIT/Sales	0.000	0.337	-5.00E-03	-0.092	0.927	0.008
	PBIT/CE	0.074	0.534	-0.763	**-3.314****	**0.001**	**10.984**
Collateral	NFA/TNA	0.004	0.394	-0.176	-0.719	0.473	0.517
	GFA/TGA	0.004	0.414	-0.172	-0.721	0.472	0.520
	(Nfa+Inv+AR)/TNA	0.095	-0.532	1.090	**3.805****	**0.000**	**14.476**
	L&B/TGA	0.007	0.371	-0.377	-0.965	0.336	0.932
	P&E/TGA	0.009	0.354	-0.024	-1.146	0.254	1.313
	Inventories/TNA	0.049	0.124	1.077	**2.674****	**0.008**	**7.151**
Volatility	SD of PBIT	0.026	0.369	-1.00E-03	-1.913	0.058	3.660
	SD of % change in PBIT	0.001	0.340	-1.10E-05	-0.283	0.778	0.080
	SD of PBITDA/TGA	0.000	0.336	0.005	0.006	0.995	0.000
	COV of PBIT	0.006	0.329	0.004	0.942	0.348	0.887
	COV of PBIT/CE	0.015	0.34	-0.014	-1.459	0.147	2.129
	COV of PBIT/ TNA	0.045	0.282	0.076	**2.542***	**0.012**	**6.462**
Growth rate	CAGR of TNA	0.015	0.433	-0.679	-1.443	0.151	2.081
	CAGR of sales	0.000	0.352	-0.109	-0.261	0.795	0.068
NDTS	Depr/TGA	0.017	0.476	-5.122	-1.53	0.128	2.341
	Depr+ET/TGA	0.019	0.394	-0.453	-1.622	0.107	2.63
	Depr/PBITDA	0.004	0.33	0.024	0.699	0.485	0.489
Debt Service capacity	PBDIT/INT	0.018	0.355	0.00E+00	-1.583	0.116	2.505
Age	Age as on 31-03-2008	0.006	0.415	-0.002	-0.898	0.371	0.806
	Log of age of firm	0.006	0.626	-0.079	-0.89	0.375	0.792
Dividend payout	Equity Div/PAT	0.028	0.423	-0.272	**-1.979***	**0.050**	**3.918**
Liquidity	CA/CL	0.014	0.436	-0.033	-1.399	0.164	1.958
Net Exports	Net exp/Sales	0.006	0.331	-0.165	-0.887	0.376	0.787
Cost of Equity	DIV/SC	0.054	0.445	-1.797	**-2.805****	**0.006**	**7.867**
Uniqueness	R&D/Sales	0.013	0.356	-3.709	-1.330	0.186	1.770
Cost of Borrowing	INT/DEBT	0.001	0.364	-0.209	-0.352	0.726	0.124
*** indicates significance at 5% level**							
**** indicates significance at 1% level**							

for Short Term Bank Borrowings and Commercial Paper as a source of finance decreases. Profitability indicators have significant negative impact on STD/NW indicating that Profitable companies must be having sufficient internally generated cash reserves to meet short term working capital requirements and hence do not require to borrow from short term debt sources.

The Collateral indicator (NfA+Inv+AR)/TNA is significant at 1% level of significance and has positive impact on STD/NW ratio indicating that along with net fixed assets, for availing Short Term Bank Borrowings, companies Inventories and Accounts Receivables also act as Collaterals. Volatility indicator COV of PBIT/TNA has positive impact on STD/NW ratio which means that if earnings risk for a company increase, companies prefer Short Term Bank Borrowings during that period.

Dividend Payout has negative impact on STD/NW ratio indicating that as the Dividend Payout for a company increase, companies resort to lower levels of Short Term Bank Borrowings. This indicates that the company has sufficient internally generated funds because of higher profits and hence may have declared high dividends.

Cost of Equity represented by DIV/SC has negative impact on STD/NW indicating that companies either resort to long term debt or prefer internal financing as Cost of Equity rises. The't' statistic of indicators of Growth rate, NDTS, Age, Net Exports, Uniqueness and Cost of Borrowings indicated insignificant impact on STD/NW ratio.

5.1.6 Results of Simple Regression on STD1/NW Ratio

In Table 5.6, results of simple linear regression of STD1/NW (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Increase in Size as reflected by indicator Log of GTFA means that companies' collaterals in the form of fixed assets have increased which support more Long Term Debt than Short Term Debt. This is indicated by significant negative coefficient of Log of GTFA with STD1/NW ratio. Profitability indicators have negative impact on STD1/NW ratio indicating that FDI Companies follow Pecking Order Theory even before resorting to short term borrowings to finance the business.

The Collateral indicators GFA/TGA and NFA/TNA are significant at 5% level of significance and have negative impact on STD1/ NW ratio, but at the same time collateral indicator (Nfa+Inv+AR)/TNA and INV/TNA are significant at 1% level of significance

Table 5.6							
Simple Linear Regression on Debt Ratio- STD1/NW							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.003	1.545	-0.043	-0.615	0.539	0.378
	Log of GTFA	0.042	2.072	-0.168	**-2.445***	**0.016**	**5.977**
	Log of TNA	0.025	2.051	-0.142	-1.880	0.062	3.536
Profitability	PBIT/TNA	0.115	2.199	-6.161	**-4.231****	**0.000**	**17.898**
	PBITDA/TGA	0.125	2.368	-7.196	**-4.443****	**0.000**	**19.741**
	PBT/TNA	0.147	1.967	-5.881	**-4.886****	**0.000**	**23.875**
	PBIT/Sales	0.000	1.325	0.00E+00	-0.001	0.999	0.000
	PBIT/CE	0.018	1.586	-1.009	-1.589	0.114	2.526
Collateral	NFA/TNA	0.041	1.833	-1.554	**-2.416***	**0.017**	**5.837**
	GFA/TGA	0.043	2.027	-1.566	**-2.496***	**0.014**	**6.228**
	(Nfa+Inv+AR)/TNA	0.051	-0.377	2.135	**2.714****	**0.007**	**7.367**
	L&B/TGA	0.021	1.488	-1.780	-1.711	0.089	2.927
	P&E/TGA	0.006	1.363	-0.053	-0.931	0.354	0.866
	Inventories/TNA	0.066	0.664	3.340	**3.121****	**0.002**	**9.743**
Volatility	SD of PBIT	0.005	1.365	-1.00E-03	-0.866	0.388	0.750
	SD of % ch in PBIT	0.003	1.346	-7.00E-05	-0.693	0.490	0.480
	SD of PBITDA/TGA	0.001	1.269	0.859	0.406	0.685	0.165
	COV of PBIT	0.016	1.293	0.018	1.499	0.136	2.247
	COV of PBIT/CE	0.007	1.331	-0.024	-0.957	0.340	0.916
	COV of PBIT/ TNA	0.088	1.120	0.286	**3.648****	**0.000**	**13.307**
Growth rate	CAGR of TNA	0.030	1.688	-.2.565	**-2.049***	**0.042**	**4.197**
	CAGR of sales	0.002	1.406	-0.584	-0.520	0.604	0.270
NDTS	Depr/TGA	0.053	1.993	-24.56	**-2.790****	**0.006**	**7.787**
	Depr+ET/TGA	0.036	1.539	-1.688	**-2.276***	**0.024**	**5.179**
	Depr/PBITDA	0.005	1.303	0.078	0.840	0.403	0.705
Debt Service capacity	PBDIT/INT	0.016	1.371	0.00E+00	-1.495	0.137	2.235
Age	Age as on 31-03-2008	0.005	1.527	-0.005	-0.865	0.389	0.748
	Log of age of firm	0.008	2.226	-0.247	-1.034	0.303	1.069
Dividend payout	Equity Div/PAT	0.020	1.519	-0.616	-1.664	0.098	2.768
Liquidity	CA/CL	0.078	1.951	-0.207	**-3.414****	**0.001**	**11.658**
Net Exports	Net exp/Sales	0.043	1.283	-1.213	**-2.477***	**0.014**	**6.136**
Cost of Equity	DIV/SC	0.018	1.491	-2.751	-1.573	0.118	2.473
Uniqueness	R&D/Sales	0.023	1.394	-13.34	-1.795	0.075	3.221
Cost of Borrowing	INT/DEBT	0.009	1.087	1.787	1.129	0.261	1.274
* indicates significance at 5% level							
** indicates significance at 1% level							

and have positively impact on STD1/NW ratio indicating that increase in fixed assets increases the company's ability to avail Long Term Debt Funds and hence lower levels of Short Term Debt Funds. At the same time, higher levels of Inventory and Accounts

Receivables would mean increased preference for Short Term Debt as these act as Collaterals for Short Term Borrowings. It also indicates that companies having higher levels of Inventory are in greater need of working capital requirements as their funds are tied up in investment in inventories which are financed through Short Term Debt Funds.

Volatility has positive impact on STD1/NW ratio indicating increased preference for Short Term Debt Funds by companies in case of volatile profits. Growth rate indicator CAGR of TNA is significant and has negative impact on STD1/NW ratio which means high growth companies prefer to keep their Short Term Debt levels low.

NDTS indicators have negative impact on STD1/NW which means that the companies having high tax shields in form of depreciation and export turnovers must be preferring Long Term Debt over Short Term Debt to finance their funding requirements. Liquidity has significant negative impact on STD1/NW ratio indicating that FDI Companies will borrow lower short term debt if they have sufficient liquidity.

Net exports have significant negative impact on STD1/NW ratio which indicates that the companies which are net exporters are already given lot of tax concessions by the Indian government and hence these companies do not need to avail Short Term Debt Funds to finance their business.

5.1.7 Results of Simple Regression on LTBB/TA Ratio

In Table 5.7, results of simple linear regression of LTBB/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Size as indicated by Log of GTFA is significant at 1% level of significance and has positive impact on LTBB/TA ratio confirming predictions of Trade-Off Theory which states that large firms with tangible assets tend to borrow more than small firms. Highly significant positive coefficients of NFA/TNA, GFA/TGA and (Nfa+Inv+AR)/TNA confirm this belief. NDTS has significant and positively impact on LTBB/TA ratio which means that increase in NDTS signify increased investment in fixed assets which partly is financed through Long Term Bank Borrowings and hence the positive impact of NDTS on LTBB/TA ratio. Age factor has a significant negative impact on Long Term Bank Borrowings which confirms to predictions of Pecking Order Theory. According to Pecking Order Theory, mature firms may have

Table 5.7							
Simple Linear Regression on Debt Ratio- LTBB/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.001	0.035	-0.001	-0.446	0.656	0.199
	Log of GTFA	0.046	0.001	0.006	**2.576****	**0.011**	**6.635**
	Log of TNA	0.006	0.017	0.002	0.879	0.381	0.772
Profitability	PBIT/TNA	0.028	0.045	-0.111	**-1.989***	**0.049**	**3.956**
	PBITDA/TGA	0.023	0.046	-0.112	-1.789	0.076	3.199
	PBT/TNA	0.063	0.045	-0.141	**-3.041****	**0.003**	**9.250**
	PBIT/Sales	0.006	0.029	5.00E-03	0.888	0.376	0.789
	PBIT/CE	0.047	0.045	-0.060	**-2.601****	**0.010**	**6.767**
Collateral	NFA/TNA	0.342	-0.025	0.166	**8.471****	**0.000**	**71.759**
	GFA/TGA	0.275	-0.036	0.145	**7.237****	**0.000**	**52.37**
	(Nfa+Inv+AR)/TNA	0.056	-0.036	0.083	**2.875****	**0.005**	**8.264**
	L&B/TGA	0.101	0.016	0.144	**3.942****	**0.000**	**15.537**
	P&E/TGA	0.005	0.031	-0.002	-0.829	0.408	0.687
	Inventories/TNA	0.061	0.053	-0.118	**-2.991****	**0.003**	**8.945**
Volatility	SD of PBIT	0.001	0.030	-9.00E-06	-0.340	0.734	0.116
	SD of % change in PBIT	0.000	0.029	4.23E-07	0.115	0.909	0.013
	SD of PBITDA/TGA	0.012	0.036	-0.098	-1.273	0.205	1.621
	COV of PBIT	0.004	0.030	0.000	-0.712	0.477	0.508
	COV of PBIT/CE	0.013	0.030	-0.001	-1.338	0.183	1.790
	COV of PBIT/ TNA	0.001	0.030	-0.001	-0.396	0.693	0.157
Growth rate	CAGR of TNA	0.014	0.020	0.065	1.403	0.163	1.968
	CAGR of sales	0.011	0.022	0.051	1.232	0.220	1.517
NDTS	Depr/TGA	0.022	0.014	0.574	1.746	0.083	3.048
	Depr+ET/TGA	0.011	0.025	0.034	1.236	0.219	1.527
	Depr/PBITDA	0.028	0.028	0.007	**1.983***	**0.049**	**3.931**
Debt Service capacity	PBDIT/INT	0.010	0.031	-8.80E-06	-1.162	0.247	1.351
Age	Age as on 31-03-2008	0.030	0.047	0.000	**-2.051***	**0.042**	**4.208**
	Log of age of firm	0.029	0.094	-0.018	**-2.026***	**0.045**	**4.104**
Dividend payout	Equity Div/PAT	0.012	0.035	-0.018	-1.307	0.193	1.709
Liquidity	CA/CL	0.000	0.028	0.001	0.246	0.806	0.061
Net Exports	Net exp/Sales	0.108	0.032	0.071	**4.084****	**0.000**	**16.683**
Cost of Equity	DIV/SC	0.025	0.037	-0.121	-1.887	0.061	3.559
Uniqueness	R&D/Sales	0.000	0.029	0.006	0.023	0.981	0.001
Cost of Borrowing	INT/DEBT	0.057	0.051	-0.164	**-2.894****	**0.004**	**8.377**
* indicates significance at 5% level							
** indicates significance at 1% level							

shortage of growth opportunities and hence may not be in need of funds. This belief is confirmed by negative correlation coefficient between Age and Growth indicators (Table 5.24 for Correlation matrix). Net exports is a significant predictor of LTBB/TA ratio and has positive impact on the ratio indicating that companies which are net exporters finance their assets through Long Term Bank Borrowings. Cost of Borrowing is significant at 1% level of significance and has negative impact on LTBB/TA ratio which means that as interest rates increase; companies reduce their dependence on Long Term Bank Borrowings and may prefer Short Term Borrowings as indicated by simple regression STD1/TA ratio (Table 5.1.3). The 't' statistic of indicators of Volatility, Growth rate, Debt service capacity, Dividend payout, Liquidity, Cost of Equity and Uniqueness specify insignificant impact on LTBB/TA ratio.

5.1.8 Results of Simple Regression on LTD/TA Ratio

In Table 5.8, results of simple linear regression of LTD/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. It is observed that R^2 value of NFA/TNA is highest among all predictors and indicates that about 38% of variance in the Debt Ratio – LTD/TA is accounted for by NFA/TNA. It shows that the t-statistic for NFA/TNA is 10.974, and is statistically significant at 1% level of significance and its coefficient is positive indicating that companies having higher Collaterals resort to more Long Term Debt in their Capital Structures. In fact all other indicators for measuring Collateral effect (GFA/TGA with R^2 of 0.39 and (Nfa+Inv+AR)/TA with R^2 of 0.15) had significant positive effect on the LTD/TA ratio. These results are consistent with Bevan & Danbolt (2000)[1] and Song (2005)[4]. The effect of INV/TNA on LTD/TA ratio is not very significant as p-value just equal to .05 which is equal to level of significance of 5%, but the important aspect is that the coefficient is negative, which means Inventories must be supporting more of Short Term Debt rather than Long Term Debt. This fact is proved when regression results of INV/TNA with Short Term Debt Ratios are observed. These results are generally consistent with Trade-Off Theory and Pecking Order Theory as both theories suggest positive relationship between tangibility and leverage.

Profitability indicator PBT/TNA has negative impact on LTD/TA ratio. This is also a significant predictor at 1% level of significance and is able to explain about 27% variation in LTD/TA ratio. Other indicators of profitability – PBITDA/TGA and PBIT/TNA also have negative impact on LTD/TA and are significant predictors at 1% level of significance. This result is explained by Pecking Order Theory which states that highly profitable firms, having good cash flows may resort to lower levels of debt

Table 5.8							
Simple Linear Regression on Debt Ratio- LTD/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.000	0.160	0.001	0.114	0.909	0.013
	Log of GTFA	0.096	0.042	0.027	**3.833****	**0.000**	**14.693**
	Log of TNA	0.021	0.093	0.014	1.725	0.087	2.975
Profitability	PBIT/TNA	0.162	0.275	-0.782	**-5.159****	**0.000**	**26.614**
	PBITDA/TGA	0.150	0.286	-0.842	**-4.933****	**0.000**	**24.332**
	PBT/TNA	0.270	0.257	-0.851	**-7.153****	**0.000**	**51.158**
	PBIT/Sales	0.000	0.164	1.14E-05	0.001	0.0999	0.000
	PBIT/CE	0.067	0.218	-0.208	**-3.141****	**0.002**	**9.868**
Collateral	NFA/TNA	0.466	-0.020	0.563	**10.974****	**0.000**	**120.431**
	GFA/TGA	0.390	-0.061	0.503	**9.391****	**0.000**	**88.197**
	(Nfa+Inv+AR)/TNA	0.157	-0.157	0.402	**5.079****	**0.000**	**25.793**
	L&B/TGA	0.003	0.158	0.068	0.605	0.546	0.366
	P&E/TGA	0.000	0.164	0.001	0.088	0.930	0.008
	Inventories/TNA	0.028	0.210	-0.231	**-1.976***	**0.050**	**3.904**
Volatility	SD of PBIT	0.007	0.159	7.83E-05	1.018	0.310	1.037
	SD of % ch in PBIT	0.002	0.162	6.18E-06	0.575	0.566	0.331
	SD of PBITDA/TGA	0.004	0.174	-0.159	-0.705	0.482	0.497
	COV of PBIT	0.005	0.162	0.001	0.811	0.419	0.657
	COV of PBIT/CE	0.017	0.165	-0.004	-1.555	0.122	2.418
	COV of PBIT/ TNA	0.007	0.158	0.009	1.013	0.313	1.026
Growth rate	CAGR of TNA	0.001	0.156	0.056	0.413	0.680	0.170
	CAGR of sales	0.003	0.153	0.083	0.692	0.490	0.479
NDTS	Depr/TGA	0.036	0.105	2.162	**2.278***	**0.024**	**5.188**
	Depr+ET/TGA	0.004	0.171	-0.058	-0.716	0.475	0.513
	Depr/PBITDA	0.042	0.157	0.024	**2.469***	**0.015**	**6.096**
Debt Service capacity	PBDIT/INT	0.015	0.169	-3.10E-05	-1.427	0.156	2.026
Age	Age as on 31-03-2008	0.061	0.237	-0.002	**-2.985****	**0.003**	**8.908**
	Log of age of firm	0.055	0.422	-0.071	**-2.833****	**0.005**	**8.024**
Dividend payout	Equity Div/PAT	0.034	0.191	-0.087	**-2.213***	**0.029**	**4.896**
Liquidity	CA/CL	0.008	0.185	-0.007	-1.041	0.300	1.084
Net Exports	Net exp/Sales	0.000	0.164	0.003	0.049	0.961	0.002
Cost of Equity	DIV/SC	0.096	0.206	-0.686	**-3.825****	**0.000**	**14.628**
Uniqueness	R&D/Sales	0.012	0.159	1.048	1.312	0.192	1.722
Cost of Borrowing	INT/DEBT	0.095	0.246	-0.616	**-3.813****	**0.000**	**14.535**
* indicates significance at 5% level							
** indicates significance at 1% level							

as they have sufficient retained earnings to fall back upon to finance their investments. Size effect on LTD/TA as measured by Log of GTFA is positive and statistically significant at 1% level of significance. This confirms the predictions of both

Trade-Off and Pecking Order Theory which states that large firms with more tangible assets tend to borrow more. The results are consistent with Bhaduri (2002)[5] who had found that firms with large size depend more on long term borrowings. NDTS indicators have positive impact on LTD/TA ratio, indicating that investment in fixed assets is financed through long term debt, as investment in fixed assets increases; depreciation on fixed assets also increases, thus explaining positive impact of indicators of NDTS on LTD/TA ratio.

Age has negative impact on LTD/TA ratio, again supporting Pecking Order Theory. Dividend Payout and Cost of Equity has negative impact on LTD/TA ratio. This might be due to the fact that increased profitability results in higher dividend payouts and high dividend payouts along with increased profitability might indicate sufficient internally generated funds to fall back upon to finance companies investments. This explains negative impact of Dividend payout and Cost of equity on LTD/TA ratio. The 't' statistic of indicators of Volatility, Growth rate, Debt Service Capacity, Liquidity, Net exports and Uniqueness indicate insignificant impact on LTD/TA ratio.

5.1.9 Results of Regression on LTD/NW Ratio

In Table 5.9, results of simple linear regression of LTD/NW (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. The results are almost similar to simple linear regressions on LTD/TA ratio (Table 5.8) as indicated by significant and positive impact of Size as denoted by Log of GTFA and Collaterals as denoted by NFA/ NA, GFA/TGA and (Nfa +Inv+AR)/ TNA on the Debt ratio. Profitability indicators, Age and Cost of Equity are significant at 1% level of significance and have negative impact on LTD/NW ratio.

The only difference in results of LTD/NW and LTD/TA ratios is with regards to indicators INV/TNA, NDTS, Dividend Payout, and Cost of Borrowings as they become insignificant predictors of LTD/NW ratio. This indicates that Long Term Debt when scaled down to Owner's Funds reflect some kind of policy decisions of FDI Companies in India. The level of inventories or the amount of dividends generally do not affect the Debt-Equity mix which means that company resort to target Capital Structure ratios and try to maintain these levels by shifting to short term debt whenever needed. This is very much confirming the predictions of Trade-off Theory, especially the dynamic version of Trade-off Theory.

Table 5.9							
Simple Linear Regression on Debt Ratio- LTD/NW							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.001	0.762	-0.017	-0.369	0.713	0.136
	Log of GTFA	0.031	0.244	0.097	**2.096***	**0.038**	**4.393**
	Log of TNA	0.003	0.512	0.032	0.619	0.537	0.384
Profitability	PBIT/TNA	0.144	1.327	-4.604	**-4.812****	**0.000**	**23.155**
	PBITDA/TGA	0.133	1.392	-4.954	**-4.599****	**0.000**	**21.152**
	PBT/TNA	0.222	1.201	-4.823	**-6.280****	**0.000**	**39.436**
	PBIT/Sales	0.000	0.676	-2.20E-02	-0.237	0.813	0.056
	PBIT/CE	0.022	0.866	-0.744	-1.759	0.081	3.093
Collateral	NFA/TNA	0.240	-0.152	2.525	**6.602****	**0.000**	**43.593**
	GFA/TGA	0.199	-0.333	2.247	**5.860****	**0.000**	**34.343**
	(Nfa+Inv+AR)/TNA	0.108	-0.982	2.078	**4.080****	**0.000**	**16.645**
	L&B/TGA	0.000	0.673	0.014	0.020	0.984	0.000
	P&E/TGA	0.000	0.672	0.003	0.078	0.938	0.006
	Inventories/TNA	0.004	0.778	-0.525	-0.712	0.478	0.507
Volatility	SD of PBIT	0.001	0.663	0.00E+00	0.363	0.717	0.132
	SD of % ch in PBIT	0.000	0.670	1.41E-05	0.210	0.834	0.044
	SD of PBITDA/TGA	0.002	0.723	-0.767	-0.544	0.588	0.296
	COV of PBIT	0.011	0.657	0.010	1.251	0.213	1.565
	COV of PBIT/CE	0.002	0.676	-0.009	-0.508	0.612	0.258
	COV of PBIT/ TNA	0.012	0.624	0.071	1.296	0.197	1.679
Growth rate	CAGR of TNA	0.001	0.716	-0.297	-0.351	0.726	0.123
	CAGR of sales	0.000	0.659	0.111	0.147	0.883	0.022
NDTS	Depr/TGA	0.008	0.504	6.258	1.040	0.300	1.081
	Depr+ET/TGA	0.011	0.754	-0.626	-1.247	0.215	1.555
	Depr/PBITDA	0.022	0.644	0.108	1.747	0.083	3.053
Debt Service capacity	PBDIT/INT	0.015	0.704	0.00E+00	-1.427	0.156	2.037
Age	Age as on 31-03-2008	0.085	1.212	-0.013	**-3.583****	**0.000**	**12.84**
	Log of age of firm	0.093	2.772	-0.575	**-3.768****	**0.000**	**14.197**
Dividend payout	Equity Div/PAT	0.025	0.819	-0.461	-1.869	0.064	3.492
Liquidity	CA/CL	0.022	0.895	-0.073	-1.750	0.082	3.061
Net Exports	Net exp/Sales	0.009	0.661	-0.378	-1.137	0.257	1.293
Cost of Equity	DIV/SC	0.069	0.893	-3.627	**-3.188****	**0.002**	**10.162**
Uniqueness	R&D/Sales	0.003	0.657	3.308	0.660	0.511	9.052
Cost of Borrowing	INT/DEBT	0.026	0.944	-2.027	-1.935	0.055	3.743
* indicates significance at 5% level							
** indicates significance at 1% level							

5.1.10 Results of Regression on LTD/ (NW + LTD) Ratio

In Table 5.10 results of simple linear regression of LTD/(NW+LTD) (Debt Ratio) on each indicator of independent variable of 140 sample FDI Companies are presented.

Table 5.10							
Simple Linear Regression on Debt Ratio- LTD/(NW+LTD)							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.008	0.477	-0.032	-1.068	0.287	1.141
	Log of GTFA	0.000	0.292	0.005	0.151	0.88	0.023
	Log of TNA	0.003	0.415	-0.020	-0.608	0.544	0.370
Profitability	PBIT/TNA	0.053	0.569	-1.806	**-2.774****	**0.006**	**7.698**
	PBITDA/TGA	0.060	0.624	-2.148	**-2.961****	**0.004**	**8.770**
	PBT/TNA	0.105	0.547	-2.148	**-4.033****	**0.000**	**16.269**
	PBIT/Sales	0.000	0.312	6.00E-03	0.095	0.924	0.009
	PBIT/CE	0.058	0.986	3.737	0.000	0.000	13.964
Collateral	NFA/TNA	0.038	0.099	0.651	**2.341***	**0.021**	**5.480**
	GFA/TGA	0.042	0.012	0.670	**2.471***	**0.015**	**6.108**
	(Nfa+Inv+AR)/TNA	0.049	-0.407	0.903	**2.654****	**0.009**	**7.042**
	L&B/TGA	0.000	0.305	0.082	0.180	0.857	0.033
	P&E/TGA	0.000	0.317	-0.006	-0.252	0.801	0.064
	Inventories/TNA	0.008	0.211	0.515	1.080	0.282	1.167
Volatility	SD of PBIT	0.000	0.317	-7.20E-05	-0.230	0.818	0.053
	SD of % change in PBIT	0.000	0.310	8.20E–006	0.189	0.850	0.036
	SD of PBITDA/TGA	0.006	0.260	0.816	0.895	0.372	0.802
	COV of PBIT	0.003	0.306	0.004	0.673	0.502	0.453
	COV of PBIT/CE	0.003	0.315	-0.007	-0.684	0.495	0.468
	COV of PBIT/ TNA	0.032	0.259	0.075	**2.150***	**0.033**	**4.622**
Growth rate	CAGR of TNA	0.020	0.443	-0.92	-1.694	0.093	2.869
	CAGR of sales	0.025	0.438	-0.908	-1.895	0.060	3.591
NDTS	Depr/TGA	0.001	0.345	-1.199	-0.307	0.759	0.094
	Depr+ET/TGA	0.003	0.339	-0.205	-0.63	0.530	0.396
	Depr/PBITDA	0.025	0.292	0.075	1.867	0.064	3.486
Debt Service capacity	PBDIT/INT	0.007	0.326	-8.90E-05	-0.996	0.321	0.993
Age	Age as on 31-03-2008	0.021	0.483	-0.004	-1.702	0.091	2.896
	Log of age of firm	0.018	0.912	-0.164	-1.600	0.112	2.561
Dividend payout	Equity Div/PAT	0.022	0.401	-0.279	-1.747	0.083	3.052
Liquidity	CA/CL	0.011	0.413	-0.033	-1.222	0.224	1.492
Net Exports	Net exp/Sales	0.008	0.305	-0.228	-1.060	0.291	1.123
Cost of Equity	DIV/SC	0.039	0.419	-1.760	**-2.354****	**0.020**	**5.543**
Uniqueness	R&D/Sales	0.000	0.315	-0.440	-0.136	0.892	0.018
Cost of Borrowing	INT/DEBT	0.004	0.383	-0.528	-0.770	0.443	0.593
* indicates significance at 5% level							
** indicates significance at 1% level							

This ratio represents the contribution of Long Term Debt towards capital employed in the business. Profitability indicators PBIT/TNA, PBITDA/TGA and PBT/TNA have highly significant negative impact on LTD/ (NW + LTD) ratio indicating that Pecking

Order Theory is applicable to FDI Companies in India. Collaterals, as indicated by NFA/TNA, GFA/TGA and (NFA+Inv+AR)/TNA are significant and have positive impact on LTD/(NW+LTD) Ratio again confirming predictions of Trade-Off Theory and Pecking Order Theory.

Volatility indicator COV of PBIT/TNA is positively related to LTD/(NW+LTD) Ratio indicating again that volatile earnings do not deter companies from resorting to long term borrowings and thus companies tend to maintain their target debt-equity mix in spite of high business risk faced by them.

Increase in Cost of Equity has negative effect on – LTD/(NW+LTD) ratio, which means that when Cost of Equity increases, neither does the company resort to Short Term Debt Funds as revealed by earlier ratios, nor does company resort to Long Term Debt to meet its financing requirements. This means that the sample companies are highly profitable companies who declare high dividends and also are capable of meeting its financing requirements through internally generated funds, which explains the negative impact of Cost of Equity on LTD/(NW + LTD) ratio.

5.1.11 Results of Regression on TD/TA Ratio

In Table 5.11, results of simple linear regression of TD/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Total debt includes Short Term Bank Borrowings and Commercial Paper but does not include Current Liabilities and Provisions. The indicators of Size - Log of GTFA and Collateral effect NFA/TNA, GFA/TGA and (NFA+Inv+AR)/TNA has significant positive impact on TD/TA Ratio which mean that large firms with tangible assets tend to borrow more.

Profitability has negative impact on TD/TA ratio. It seems that first companies follow pecking order, profitable companies having sufficient internally generated funds first prefer to use these funds for financing purposes, then resort to Long Term Debt Funds although trying to maintain certain target debt levels and heavily rely on Short Term Debt Funds to meet most of their working capital requirements. The maintenance of target debt levels is also confirmed by the fact that Debt service capacity as indicated by PBDIT/INT ratio, which has negative impact on TD/TA ratio. This reveals that inspite of having sufficient Debt Servicing Capacity, companies do not resort to high

Table 5.11							
Simple Linear Regression on Debt Ratio- TD/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.002	0.276	-0.005	-0.545	0.586	0.297
	Log of GTFA	0.030	0.167	0.019	**2.080***	**0.039**	**4.326**
	Log of TNA	0.001	0.228	0.004	0.435	0.665	0.189
Profitability	PBIT/TNA	0.224	0.410	-1.124	**-6.320****	**0.000**	**39.941**
	PBITDA/TGA	0.222	0.432	-1.251	**-6.280****	**0.000**	**39.436**
	PBT/TNA	0.394	0.387	-1.254	**-9.473****	**0.000**	**89.736**
	PBIT/Sales	0.000	0.25	5.21E-05	0.003	0.998	0.000
	PBIT/CE	0.061	0.313	-0.243	**-3.003***	**0.003**	**9.017**
Collateral	NFA/TNA	0.256	0.084	0.509	**6.894****	**0.000**	**47.532**
	GFA/TGA	0.219	0.044	0.460	**6.212****	**0.000**	**38.593**
	(Nfa+Inv+AR)/TNA	0.245	-0.238	0.612	**6.692****	**0.000**	**44.78**
	L&B/TGA	0.001	0.246	0.042	0.305	0.761	0.093
	P&E/TGA	0.001	0.253	-0.003	-0.433	0.666	0.187
	Inventories/TNA	0.000	0.249	0.009	0.062	0.951	0.004
Volatility	SD of PBIT	0.001	0.252	-3.00E-05	-0.318	0.751	0.101
	SD of % change in PBIT	0.001	0.249	5.36E-06	0.409	0.683	0.167
	SD of PBITDA/TGA	0.000	0.248	0.029	0.104	0.918	0.011
	COV of PBIT	0.007	0.248	0.002	0.956	0.341	0.915
	COV of PBIT/CE	0.017	0.252	-0.005	-1.552	0.123	2.407
	COV of PBIT/ TNA	0.038	0.233	0.024	**2.331***	**0.021**	**5.433**
Growth rate	CAGR of TNA	0.003	0.265	-0.100	-0.607	0.545	0.368
	CAGR of sales	0.000	0.249	0.011	0.074	0.941	0.005
NDTS	Depr/TGA	0.007	0.218	1.193	1.015	0.312	1.03
	Depr+ET/TGA	0.010	0.265	-0.115	-1.176	0.242	1.382
	Depr/PBITDA	0.034	0.243	0.026	**2.201***	**0.029**	**4.846**
Debt Service capacity	PBDIT/INT	0.030	0.259	-5.60E-05	**-2.082***	**0.039**	**4.335**
Age	Age as on 31-03-2008	0.054	0.334	-0.002	**-2.798****	**0.006**	**7.83**
	Log of age of firm	0.046	0.539	-0.079	**-2.590***	**0.011**	**6.708**
Dividend payout	Equity Div/PAT	0.049	0.290	-0.126	**-2.653****	**0.009**	**7.041**
Liquidity	CA/CL	0.007	0.276	-0.008	-1.017	0.311	1.034
Net Exports	Net exp/Sales	0.000	0.250	-0.005	-0.084	0.933	0.007
Cost of Equity	DIV/SC	0.146	0.313	-1.034	**-4.858****	**0.000**	**23.604**
Uniqueness	R&D/Sales	0.002	0.248	0.486	0.496	0.621	0.246
Cost of Borrowing	INT/DEBT	0.086	0.345	-0.714	**-3.599****	**0.000**	**12.952**
* indicates significance at 5% level							
** indicates significance at 1% level							

debt levels for financing purposes. Age has negative impact on TD/TA ratio as mature firms have less growth opportunities and hence are not in need of Long Term Funds.

Dividend Payout, Cost of Equity and Cost of Borrowing have negative effect on TD/TA ratio. The negative impact of Dividend Payout and Cost of equity on TD/TA ratio indicates that companies do not resort to debt even when Cost of Equity increases or when there are high Dividend Payouts. The companies must be having sufficient internally generated reserves to fall back upon in case of need. At the same time, if Cost of Borrowings increase, companies must be temporarily meeting their requirements by availing lot of Trade Credit as indicated by positive coefficient between TC&E/TA and Cost of Borrowings (Table 5.4). NDTS positively affects TD/TA ratio which once again proves that higher tax shields in the form of depreciation are the results of employment of fixed assets which are financed through debt.

5.1.12 Results of Regression on TL/TA Ratio

In Table 5.12, results of simple linear regression of TL/TA (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Total Liabilities include Current Liabilities and Provisions and TL/TA ratio is the broadest measure of leverage. As expected, when Current Liabilities are included with Total Debt, the effect of Collaterals on Debt Ratios denotes a change. Collaterals as represented by NFA/TNA and GFA/TGA no longer remain significant in determining the Debt ratio. At the same time the indicator (NFA+Inv+AR)/TNA and INV/TNA becoming significant predictors in deciding leverage levels. This means that Trade Credit is an important source of finance for FDI Companies in India as it contributes a significant proportion in TL/TA ratio.

Profitability has negative impact on TL/TA ratio indicating that Pecking Order Theory is applicable to FDI Companies in India as profitability factors has consistently negative coefficients with all the variants of debt.

Volatility indicator - COV of PBIT/TNA has positive impact on TL/TA ratio but has insignificant impact on LTBB/TA, LTD/TA and LTD/NW ratios which means that companies facing high earnings risk either resort to Short Term Debt sources for financing needs or use their internally generated funds but do not resort to Long Term Debt as that may increase their risk profile further.

NDTS indicators are projecting conflicting results as indicator Depr+ET/TGA has significant negative impact on TL/TA ratio whereas indicator Depr/PBITDA has

Table 5.12							
Simple Linear Regression on Debt Ratio- TL/TA							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.006	0.511	0.009	0.898	0.371	0.806
	Log of GTFA	0.003	0.529	0.006	0.602	0.548	0.363
	Log of TNA	0.002	0.530	0.005	0.465	0.642	0.216
Profitability	PBIT/TNA	0.197	0.715	-1.124	**-5.823****	**0.000**	**33.913**
	PBITDA/TGA	0.218	0.747	-1.323	**-6.206****	**0.000**	**38.512**
	PBT/TNA	0.329	0.689	-1.224	**-8.232****	**0.000**	**67.77**
	PBIT/Sales	0.000	0.555	5.00E-03	0.232	0.817	0.054
	PBIT/CE	0.004	0.573	-0.067	-0.748	0.456	0.560
Collateral	NFA/TNA	0.005	0.53	0.076	0.838	0.403	0.702
	GFA/TGA	0.003	0.531	0.055	0.618	0.538	0.382
	(Nfa+Inv+AR)/TNA	0.202	0.082	0.593	**5.910****	**0.000**	**34.926**
	L&B/TGA	0.008	0.570	-0.157	-1.077	0.283	1.161
	P&E/TGA	0.007	0.561	-0.008	-0.998	0.320	0.997
	Inventories/TNA	0.071	0.460	0.484	**3.256****	**0.001**	**10.601**
Volatility	SD of PBIT	0.000	0.555	7.02E-06	0.070	0.944	0.005
	SD of % change in PBIT	0.003	0.558	-9.20E-06	-0.660	0.511	0.435
	SD of PBITDA/TGA	0.023	0.521	0.527	1.810	0.073	3.275
	COV of PBIT	0.017	0.551	0.003	1.558	0.122	2.426
	COV of PBIT to CE	0.049	0.558	-0.009	**-2.670****	**0.009**	**7.128**
	COV of PBIT to TNA	0.167	0.516	0.055	**5.260****	**0.000**	**27.666**
Growth rate	CAGR of TNA	0.037	0.612	-0.398	**-2.291***	**0.023**	**5.248**
	CAGR of sales	0.003	0.568	-0.093	-0.594	0.554	0.353
NDTS	Depr/TGA	0.023	0.617	-2.266	-1.821	0.071	3.315
	Depr+ET/TGA	0.053	0.591	-0.284	**-2.774****	**0.006**	**7.697**
	Depr/PBITDA	0.059	0.545	0.037	**2.939****	**0.004**	**8.635**
Debt Service capacity	PBDIT/INT	0.036	0.565	-6.40E-05	**-2.255***	**0.026**	**5.085**
Age	Age as on 31-03-2008	0.009	0.593	-0.001	-1.147	0.253	1.315
	Log of age of firm	0.009	0.691	-0.037	-1.119	0.265	1.251
Dividend payout	Equity Div/PAT	0.026	0.587	-0.099	-1.922	0.057	3.695
Liquidity	CA/CL	0.151	0.677	-0.040	**-4.960****	**0.000**	**24.602**
Net Exports	Net exp/Sales	0.033	0.550	-0.149	**-2.176***	**0.031**	**4.733**
Cost of Equity	DIV/SC	0.034	0.587	-0.531	**-2.198***	**0.030**	**4.833**
Uniqueness	R&D/Sales	0.005	0.560	-0.903	-0.865	0.389	0.747
Cost of Borrowing	INT/DEBT	0.002	0.570	-0.112	-0.506	0.614	0.256
* indicates significance at 5% level							
** indicates significance at 1% level							

significant positive impact on TL/TA ratio indicating that investment in assets is financed through debt funds. Depreciation along with Export Turnover scaled down to

Total Gross Assets act like tax shields indicating the reduced advantage of debt funds and hence the negative impact on TL/TA ratio. Liquidity as denoted by CA/CL negatively affects TL/TA ratio. This reveals that as proportion of Current Assets increase, reliance on debt goes down. This might be due to the fact that Current Assets might be having sufficient proportions of highly liquid assets and these in turn might be used to finance investments explaining the negative relationship between Liquidity and TL/TA ratio.

Net Exports have significant negative impact on TL/TA ratio indicating that companies which are net exporters are already benefitted by lot of tax incentives given by government and do not need to rely on debt funds to meet their financing requirements. Cost of Equity negatively affects TL/TA ratio indicating that cost of equity increases only for those companies which are highly profitable and do not need external funds for financing purposes.

5.1.13 Results of Regression on TD/NW Ratio

In Table 5.13, results of simple linear regression of TD/NW (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Profitability indicators PBIT/TNA, PBITDA/TGA, PBT/TNA and PBIT/CE have negative impact on TD/NW ratio and are significant at 1% level of significance. These results support the Pecking Order Theory.

The Collateral indicators are NFA/TGA, GFA/TGA and (Nfa+Inv+AR)/TNA are significant at 1% level of significance and positively affects TD/NW ratio confirming the predictions of Trade-Off Theory. Volatility indicator COV of PBIT/TNA positively affects TD/NW ratio indicating that increase in business risk does not deter the companies from borrowings and companies continue to resort to borrowings in spite of facing high business risk.

Age factor negatively affects TD/NW ratio, which means that mature firms opt for less debt. Dividend Payout factor negatively affects TD/NW ratio indicating that higher dividend payouts indicate greater profitability and these companies resort to lower levels of debt. Even Cost of Equity indicator DIV/SC has negative impact on TD/NW ratio confirming that even if Cost of Equity rises, company do not increase the proportion of debt in their Capital Structure. Either these companies have sufficient built up reserves for funding their assets or want to maintain their current proportion of Debt- Equity mix by resorting to Short Term Debt whenever need arises.

Table 5.13							
Simple Linear Regression on Debt Ratio- TD/NW							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.007	1.319	-0.060	-0.989	0.324	0.979
	Log of GTFA	0.002	0.852	0.036	0.584	0.560	0.341
	Log of TA	0.002	1.209	-0.039	-0.583	0.561	0.340
Profitability	PBIT/TNA	0.191	1.993	-6.925	**-5.705****	**0.000**	**32.547**
	PBITDA/TGA	0.187	2.121	-7.66	**-5.625****	**0.000**	**31.645**
	PBT/TNA	0.297	1.806	-7.282	**-7.644****	**0.000**	**58.431**
	PBIT/Sales	0.000	0.1012	-2.70E-02	-0.221	0.825	0.049
	PBIT/CE	0.053	1.401	-1.511	**-2.779****	**0.006**	**7.722**
Collateral	NFA/TNA	0.122	0.324	2.348	**4.376****	**0.000**	**19.146**
	GFA/TGA	0.100	0.081	2.074	**3.907****	**0.000**	**15.267**
	(Nfa+Inv+AR)/TNA	0.147	-1.514	3.167	**4.871****	**0.000**	**23.728**
	L&B/TGA	0.001	1.043	-0.360	-0.393	0.695	0.154
	P&E/TGA	0.001	1.026	-0.021	-0.427	0.670	0.183
	Inventories/TNA	0.002	0.901	0.551	0.572	0.569	0.327
Volatility	SD of PBIT	0.002	1.032	0.00E+00	-0.542	0.589	0.293
	SD of % ch in PBIT	0.000	1.009	3.59E-06	0.041	0.967	0.002
	SD of PBITDA/TGA	0.001	1.059	-0.758	-0.411	0.682	0.169
	COV of PBIT	0.013	0.986	0.014	1.354	0.178	1.835
	COV of PBIT/CE	0.007	1.017	-0.022	-1.015	0.312	1.030
	COV of PBIT/ TNA	0.030	0.906	0.147	**2.081***	**0.039**	**4.329**
Growth rate	CAGR of TNA	0.006	1.149	-0.980	-0.887	0.377	0.787
	CAGR of sales	0.000	1.011	-0.003	-0.003	0.998	0.000
NDTS	Depr/TGA	0.000	0.980	1.121	0.142	0.887	0.02
	Depr+ET/TGA	0.020	1.148	-1.083	-1.661	0.099	2.759
	Depr/PBITDA	0.019	0.973	0.132	1.635	0.104	2.673
Debt Service capacity	PBDIT/INT	0.022	1.059	0.00E+00	-1.780	0.077	3.170
Age	Age as on 31-03-2008	0.066	1.628	-0.015	**-3.122****	**0.002**	**9.744**
	Log of age of firm	0.071	3.404	-0.656	**-3.255****	**0.001**	**10.595**
Dividend payout	Equity Div/PAT	0.037	1.242	-0.733	**-2.291***	**0.023**	**5.249**
Liquidity	CA/CL	0.027	1.330	-0.106	-1.943	0.054	3.774
Net Exports	Net exp/Sales	0.011	0.992	-0.545	-1.257	0.211	1.580
Cost of Equity	DIV/SC	0.090	1.339	-5.435	**-3.703****	**0.000**	**13.711**
Uniqueness	R&D/Sales	0.000	1.012	-0.406	-0.062	0.951	0.004
Cost of Borrowing	INT/DEBT	0.019	1.308	-2.230	-1.624	0.107	2.638
*** indicates significance at 5% level**							
**** indicates significance at 1% level**							

5.1.14 Results of Simple Regression on TD/(TD+NW) Ratio

In Table 5.14, results of simple linear regression of TD/(TD+NW) (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented.

Table 5.14

Simple Linear Regression on Debt Ratio- TD/(TD+NW)

Independent variables	Indicators	R square	Intercept	Slope	t-Statistic	p- value	F -Statistic
Size	Log of sales	0.013	0.523	-0.029	-1.369	0.173	1.875
	Log of GTFA	0.007	0.467	-0.021	-0.975	0.331	0.951
	Log of TA	0.017	0.558	-0.036	-1.553	0.123	2.411
Profitability	PBIT/TNA	0.145	0.673	-2.100	**-4.843****	**0.000**	**23.451**
	PBITDA/TGA	0.159	0.732	-2.460	**-5.111****	**0.000**	**26.123**
	PBT/TNA	0.229	0.618	-2.220	**-6.398****	**0.000**	**40.937**
	PBIT/Sales	0.000	0.375	2.00E-03	0.042	0.967	0.002
	PBIT/CE	0.022	0.463	-0.341	-1.774	0.078	3.147
Collateral	NFA/TNA	0.018	0.271	0.317	1.606	0.111	2.579
	GFA/TGA	0.013	0.258	0.262	1.356	0.177	1.839
	(Nfa+Inv+AR)/TNA	0.091	-0.314	0.865	**3.707****	**0.000**	**13.745**
	L&B/TGA	0.003	0.392	-0.189	0.593	0.554	0.352
	P&E/TGA	0.003	0.383	-0.011	-0.647	0.519	0.419
	Inventories/TNA	0.013	0.288	0.443	1.328	0.186	1.763
Volatility	SD of PBIT	0.002	0.383	0.00E+00	-0.560	0.576	0.314
	SD of % change in PBIT	0.000	0.375	-1.20E-06	-0.038	0.970	0.001
	SD of PBITDA/TGA	0.002	0.355	0.317	0.496	0.621	0.246
	COV of PBIT	0.006	0.369	0.003	0.950	0.344	0.950
	COV of PBIT/CE	0.003	0.376	-0.005	-0.628	0.531	0.395
	COV of PBI/ TNA	0.053	0.327	0.067	**2.780****	**0.006**	**7.728**
Growth rate	CAGR of TNA	0.018	0.461	-0.604	-1.583	0.116	2.506
	CAGR of sales	0.006	0.418	-0.308	-0.906	0.366	0.822
NDTS	Depr/TGA	0.009	0.459	-3.073	-1.126	0.262	1.268
	Depr+ET/TGA	0.017	0.420	-0.352	-1.550	0.123	2.402
	Depr/PBITDA	0.000	0.374	0.003	0.123	0.902	0.015
Debt Service capacity	PBDIT/INT	0.018	0.390	-9.90E-05	-1.581	0.116	2.501
Age	Age as on 31-03-2008	0.008	0.449	-0.002	-1.047	0.297	1.097
	Log of age of firm	0.006	0.618	-0.066	-0.917	0.361	0.841
Dividend payout	Equity Div/PAT	0.036	0.455	-0.252	**-2.262***	**0.025**	**5.119**
Liquidity	CA/CL	0.025	0.482	-0.035	-1.864	0.064	3.476
Net Exports	Net exp/Sales	0.007	0.370	-0.153	-1.014	0.312	1.028
Cost of Equity	DIV/SC	0.073	0.478	-1.696	**-3.293****	**0.001**	**10.844**
Uniqueness	R&D/Sales	0.001	0.380	-0.985	-0.432	0.666	0.187
Cost of Borrowing	INT/DEBT	0.011	0.452	-0.581	-1.212	0.228	1.469

*** indicates significance at 5% level**

**** indicates significance at 1% level**

The results of simple linear regression on TD/(TD+NW) ratio are almost similar to the results of regressions on TD/NW Ratio except the fact that here, Age no longer remains a significant factor. Only (NFA+Inv+AR)/TNA is significant at 1% level of significance and positively affects TD/(TD+NW) ratio indicating that due to a significant proportion of Short Term Debt in Total Debt, along with Net Fixed Assets, Inventories and Accounts Receivables also act as Collaterals for availing debt. Profitability has significant negative impact on TD/(TD+NW) ratio indicating confirmation of Pecking Order Theory, Volatility positively affects TD/(TD+NW) ratio and Dividend Payout and Cost of Equity negatively affects TD/(TD + NW) ratio.

5.1.15 Results of Simple Regression on TL/NW Ratio

In Table 5.15, results of simple linear regression of TL/NW (Debt Ratio) on each indicator of independent variable for 140 sample FDI Companies are presented. Profitability indicators PBIT/TNA, PBITDA/TGA and PBT/TNA have negative impact on TL / NW ratio. Collateral effect indicator (Nfa+Inv+AR)/ TNA is significant at 1% level of significance and positively affects TL/NW ratio. In calculation of Total liabilities, along with Short Term Bank Borrowings, Current Liabilities and Provisions are also added hence along with Net Fixed Assets, level of Inventories and Accounts Receivable also become important Collaterals for availing debt. Volatility indicator is significant and positively affects TL/NW ratio. This may be due to the fact that in risky conditions, companies may be resorting to more Short Term Debt and Total Liabilities includes a significant proportion of Short Term Debt (Table 4.2.4).

NDTS indicator has negative impact on this ratio. This may be due to the fact that total liabilities include a significant proportion of current liabilities and provisions which are used to finance working capital requirements. In earlier long term debt measures, (Table 5.7 and 5.8) where NDTS had positive effect on Debt Ratios. This indicates that whenever only long term debt is involved, NDTS have positive impact indicating that fixed assets in these companies are financed through long term debt and working capital requirements are financed through short term debt.

Age negatively affects TL / NW ratio indicating that mature firms generate sufficient cash reserves to meet their working capital needs as well as they might be profitable firms who have sufficient internally generated funds to meet financing requirements of fixed assets too. Cost of Equity and Dividend Payout have negative impact on

Table 5.15							
Simple Linear Regression on Debt Ratio- TL/NW							
Independent variables	**Indicators**	**R square**	**Intercept**	**Slope**	**t-Statistic**	**p- value**	**F -Statistic**
Size	Log of sales	0.003	2.311	-0.061	-0.616	0.539	0.380
	Log of GTFA	0.004	2.319	-0.072	-0.727	0.469	0.528
	Log of TA	0.008	2.567	-0.111	-1.032	0.304	1.065
Profitability	PBIT/TNA	0.176	3.526	-10.769	**-5.421****	**0.000**	**29.385**
	PBITDA/TGA	0.179	3.760	-12.157	**-5.480****	**0.000**	**30.033**
	PBT/TNA	0.245	3.168	-10.706	**-6.684****	**0.000**	**44.672**
	PBIT/Sales	0.000	2.000	-2.20E-02	-0.113	0.910	0.013
	PBIT/CE	0.027	2.452	-1.754	-1.963	0.052	3.852
Collateral	NFA/TNA	0.008	1.682	0.966	1.045	0.298	1.092
	GFA/TGA	0.004	1.695	0.678	0.749	0.455	0.561
	(Nfa+Inv+AR)/TNA	0.099	-1.359	4.213	**3.889****	**0.000**	**15.121**
	L&B/TGA	0.010	2.160	-1.766	-1.194	0.234	1.427
	P&E/TGA	0.003	2.035	-0.050	-0.619	0.537	0.383
	Inventories/TNA	0.023	1.441	2.818	1.822	0.071	3.320
Volatility	SD of PBIT	0.001	2.027	0.00E+00	-0.445	0.657	0.198
	SD of % ch in PBIT	0.001	2.015	-5.50E-05	-0.390	0.697	0.152
	SD of PBITDA/TGA	0.000	1.993	0.088	0.029	0.977	0.001
	COV of PBIT	0.019	1.950	0.028	1.650	0.101	2.722
	COV of PBIT/CE	0.006	2.007	-0.033	-0.918	0.360	0.843
	COV of PBIT/ TNA	0.068	1.744	0.357	**3.182****	**0.002**	**10.124**
Growth rate	CAGR of TNA	0.018	2.405	-2.869	-1.612	0.109	2.599
	CAGR of sales	0.001	2.065	-0.479	-0.302	0.763	0.091
NDTS	Depr/TGA	0.015	2.497	-18.322	-1.444	0.151	2.084
	Depr+ET/TGA	0.034	2.293	-2.316	**-2.206***	**0.029**	**4.869**
	Depr/PBITDA	0.014	1.946	0.187	1.419	0.158	2.014
Debt Service capacity	PBDIT/INT	0.021	2.075	-1.00E-03	-1.738	0.084	3.022
Age	Age as on 31-03-2008	0.036	2.740	-0.018	**-2.274***	**0.025**	**5.169**
	Log of age of firm	0.043	5.000	-0.822	**-2.479***	**0.014**	**6.148**
Dividend payout	Equity Div/PAT	0.030	2.338	-1.077	**-2.068***	**0.04**	**4.277**
Liquidity	CA/CL	0.071	2.845	-0.280	**-3.251****	**0.001**	**10.569**
Net Exports	Net exp/Sales	0.037	1.944	-1.591	**-2.293***	**0.023**	**5.256**
Cost of Equity	DIV/SC	0.047	2.385	-6.386	**-2.622****	**0.010**	**6.877**
Uniqueness	R&D/Sales	0.006	2.051	-10.016	-0.945	0.346	0.894
Cost of Borrowing	INT/DEBT	0.000	2.029	-0.232	-0.103	0.918	0.011
* indicates significance at 5% level							
** indicates significance at 1% level							

TL/NW ratio which also proves that only profitable companies must be declaring high dividends and they also have sufficient internally generated funds and do not require further debt. Net Exports has negative impact on TL / NW ratio indicating that generally companies which are net exporters avail lot of tax concessions and other benefits from the government and hence do not need to finance from debt sources.

5.2 Conclusions – Simple Regressions

The summarized simple regression results have been presented in Table 5.16. The main conclusions derived from the results of simple linear regressions conducted on each indicator of an independent variable, one at a time, with each Debt Ratio (dependent variable) are as follows:

1. The results of simple linear regressions between each indicator of an independent variable with each Debt Ratio reject the null hypotheses that there is no significant impact of Size of a company, Profitability of a company, Collateral Value of Assets, Volatility of companies' earnings, Growth Rate of a company, existence of NDTS, Debt Service Capacity, Age of a company, Dividend Payout, Liquidity, Net Exports, Cost of Borrowings, Cost of Equity and Uniqueness of a company on a company's Debt Ratios and accepts the alternative hypotheses that all the above mentioned Determinants have significant impact on Debt Ratios (Capital Structure) of FDI Companies in India.

2. Size as measured by Log of GTFA has significant negative impact on Short Term Debt Ratios, but has significant positive impact on Long Term Debt Ratios. Size as measured by Log of Sales has significant positive impact on TC&E/TA Ratio. Size generally has insignificant impact on Total Debt Ratios except in case of TD/TA Ratio where Size as measured by Log of GTFA has positive impact on the ratio. This indicates that large size companies having large fixed assets tend to borrow more of Long Term Debt rather than Short Term Debt.

3. Profitability has significant negative impact on all the Debt Ratios. This result confirms the prediction of the Pecking Order Theory according to which profitable companies having large cash flows tend to have low Debt Ratios.

4. Collateral indicators NFA / TNA and GFA / TGA have significant negative impact on Short Term Debt Ratios but have significant positive impact on Long Term and Total Debt Ratios. Collateral indicators (Nfa+Inv+AR)/TNA and INV/TNA have significant positive impact on Short Term Debt Ratios. Collateral indicators – INV/TNA has significant negative impact on Long Term Debt Ratios. This indicates that Collaterals in the form of tangible fixed assets are used to borrow Long Term Debt Funds, at the same time, Collaterals in the form of Inventories and Accounts Receivables support Short Term Debt.

5. Volatility indicator COV of PBIT/TNA has significant positive impact on all the Short Term and Total Debt Ratios. Another indicator of Volatility - SD of PBIT has negative impact on Short Term Debt Ratios STBB+CPLTD/TA and STD/TA but has insignificant impact on all the other Debt Ratios. The other indicator of Volatility - COV of PBIT/CE also has negative impact on TC&E/TA Ratio and on TL/TA ratio, but has insignificant impact on all the other Debt Ratios. The results of the indicator COV of PBIT/TNA are more consistent as they indicate significant positive impact on all the Short Term and Total Debt Ratios and indicate that firms having volatile earnings tend to borrow more Short Term Debt Funds.

6. Growth Rate as measured by CAGR of TNA has significant negative impact on Short Term Debt Ratios and Total Debt Ratio – TL/TA, but has insignificant impact on Long Term Debt Ratios. This indicates that high growth firms in terms of Total assets tend to borrow less from Short Term Debt Funds.

7. Non Debt Tax shield indicators have negative impact on Short Term Debt Ratios, positive impact on Long Term Debt Ratios and Total Debt Ratios.

8. Debt Service Capacity has negative impact on STD/TA ratio and Total Debt Ratios but has insignificant impact on Long Term Debt Ratios. This reveals that in spite of having sufficient Debt Servicing Capacity, companies do not resort to high debt levels for financing purposes.

9. Age has positive impact on TC&E/TA ratio and significant negative impact on Long Term and Total Debt Ratios. This indicates that mature age firms prefer to borrow more from Short Term Debt Funds rather than borrowing from Long Term Debt Sources.

10. Dividend Payout has negative impact on STD/NW Ratio, LTD/TA Ratio, and on Total Debt Ratios indicating that generally companies having higher Dividend Payouts will borrow less.

11. Liquidity has significant negative impact on Short Term Debt Ratios- STD1/TA ratio and TC&E/TA Ratio, and Total Debt Ratios – TL/TA Ratio and TL/NW Ratio. Liquidity has insignificant impact on Long Term Debt Ratios. This means that companies having liquid assets will borrow less.

12. Net Exports have significant positive impact on Short Term Debt Ratios- STD1/TA Ratio and TC&E/TA Ratio and on Total Debt Ratios – TL/TA Ratio and TL/NW Ratio. Net Exports have insignificant impact on Long Term Debt Ratios. The results indicate that companies which are Net Exporters might borrow more from Short Term Debt sources.

13. Cost of Equity has significant negative impact on Short Term, Long Term and Total Debt Ratios. This means that as the Cost of Equity increases companies tend to borrow less.

14. Cost of Borrowings has significant positive impact on Short Term Debt Ratios- STD1/TA Ratio and TC&E/TA Ratio, significant negative impact on Long Term Debt Ratios – LTBB/TA Ratio and LTD/TA Ratio and on Total Debt Ratio – TD/TA Ratio. The results indicate that as Cost of Borrowings increase, companies prefer to borrow from Short Term Debt sources.

Table 5.16

Conclusions-Simple Regressions (140 FDI companies)

		Short Term Debt Ratios						Long Term Debt Ratios				Total Debt Ratios				
Dependent variables- Debt Ratios		STBB+CPLTD/TA	STD/TA	STD1/TA	TC&E/TA	STD/NW	STD1/NW	LTBB/TA	LTD/TA	LTD/NW	LTD/(NW+LTD)	TD/TA	TL/TA	TD/NW	TD/(TD+NW)	TL/NW
Independent Variables	Indicators															
Size	Log of sales	N.S	N.S	N.S	+VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	Log of GTFA	N.S	-VE*	-VE *	N.S	-VE*	-VE*	+VE**	+VE**	+VE*	N.S	+VE*	N.S	N.S	N.S	N.S
	Log of TNA	N.S	-VE*	N.S	N.S	-VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
Profitability	PBIT/TNA	-VE**	-VE**	N.S	-VE*	-VE**	-VE**	-VE*	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**
	PBITDA/TGA	-VE**	-VE**	-VE*	-VE**	-VE*	-VE**	N.S	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**
	PBT/TNA	-VE**	-VE**	-VE*	-VE*	-VE*	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**	-VE**
	PBIT/Sales	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	PBIT/CE	N.S	N.S	N.S	N.S	-VE**	N.S	-VE**	-VE**	N.S	N.S	-VE*	N.S	-VE**	N.S	N.S
Collateral	NFA/TNA	N.S	N.S	-VE**	-VE**	N.S	-VE*	+VE**	-VE**	+VE**	+VE*	+VE**	N.S	+VE**	N.S	N.S
	GFA/TGA	N.S	N.S	-VE**	-VE**	N.S	-VE*	+VE**	-VE**	+VE**	+VE*	+VE**	N.S	+VE**	N.S	N.S
	(Nfa+Inv+AR)/TNA	+VE**	+VE**	N.S	N.S	+VE**	+VE**	+VE**	-VE**	+VE**	+VE**	+VE**	+VE**	+VE**	+VE**	+VE**
	L&B/TGA	N.S	N.S	N.S	-VE**	N.S	N.S	+VE**	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	P&E/TGA	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	INV/TNA	+VE**	+VE**	+VE**	+VE**	+VE**	+VE**	-VE**	-VE*	N.S	N.S	N.S	+VE**	N.S	N.S	N.S
Volatility	SD of PBIT	-VE*	-VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	SD of % change in PBIT	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	SD of PBITDA/TGA	+VE**	N.S	+VE**	+VE**	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	COV of PBIT	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	COV of PBIT/CE	N.S	N.S	N.S	-VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S	-VE**	N.S	N.S	N.S
	COV of PBIT/ TNA	+VE**	+VE**	+VE**	+VE**	+VE*	+VE**	N.S	N.S	N.S	+VE*	+VE*	+VE**	+VE*	+VE**	+VE**
Growth rate	CAGR of TNA	-VE **	-VE*	-VE**	-VE*	N.S	-VE*	N.S	N.S	N.S	N.S	N.S	-VE*	N.S	N.S	N.S
	CAGR of sales	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
NDTS	Depr/TGA	N.S	N.S	-VE**	-VE**	N.S	-VE**	N.S	+VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S
	Depr+ET/TGA	N.S	N.S	-VE*	-VE*	N.S	-VE*	N.S	N.S	N.S	N.S	N.S	-VE**	N.S	N.S	-VE*
	Depr/PBITDA	N.S	N.S	N.S	N.S	N.S	N.S	+VE*	+VE*	N.S	N.S	+VE*	+VE**	N.S	N.S	N.S
Debt Service capacity	PBDIT/INT	N.S	-VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	-VE*	-VE*	N.S	N.S	N.S
Age	Age as on 31-03-2008	N.S	N.S	N.S	+VE*	N.S	N.S	-VE*	-VE**	-VE**	N.S	-VE**	N.S	-VE**	N.S	-VE*
	Log of age of firm	N.S	N.S	N.S	N.S	N.S	N.S	-VE*	-VE**	-VE**	N.S	-VE**	N.S	-VE**	N.S	-VE*
Dividend payout	Equity Div/PAT	N.S	N.S	N.S	N.S	-VE*	N.S	N.S	-VE*	N.S	N.S	-VE**	N.S	-VE*	-VE**	-VE*
Liquidity	CA/CL	N.S	N.S	-VE**	-VE**	N.S	N.S	N.S	N.S	N.S	N.S	N.S	-VE**	N.S	N.S	-VE**
Net Exports	Net exp/Sales	N.S	N.S	-VE*	-VE**	N.S	-VE*	+VE**	N.S	N.S	N.S	N.S	-VE*	N.S	N.S	-VE*
Cost of Equity	DIV/SC+Res	-VE**	-VE**	N.S	N.S	-VE**	N.S	N.S	-VE**	-VE**	-VE**	-VE**	-VE*	-VE**	-VE**	-VE**
Uniqueness	R&D/Sales	N.S	N.S	-VE*	-VE*	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S
Cost of Borrowing	Int/TD	N.S	N.S	+VE**	+VE**	N.S	N.S	-VE**	-VE **	N.S	N.S	-VE**	N.S	N.S	N.S	N.S

* indicates significance at 5% level

** indicates significance at 1% level

Not Significant=(NS), Positive= (+VE), Negative =(-VE)

PART- II

MULTIPLE REGRESSIONS ON VARIOUS MEASURES OF CAPITAL STRUCTURE

5.3 Results of Multiple Regressions on Debt Ratios

In this study, fourteen independent variables (Determinants of Capital Structure) explained by thirty-four indicators have been selected to study the impact of these Determinants on Capital Structure policies of 140 sample firms of FDI Companies in India. Fifteen measures of Capital Structure have been selected for the study. The simple regressions conducted in Section 5.1.1 to 5.1.15 reveal that some indicators representing the selected factors have significant impact on most of the measures of Capital Structure, while some indicators have insignificant impact on the Debt Ratios.

Table 5.17

List of Determinants of Capital Structure Selected For Multiple Regression Analysis.

Sr. No	Determinants	Indicators	Abbreviation
1	Size	Natural Logarithm of Sales	Log of sales
		Natural Logarithm of Gross Total Fixed Assets	Log of GTFA
		Natural Logarithm of Total Net Assets	Log of TNA
2	Profitability	Profit Before Interest,Tax, Depreciation & Amortization /Total Gross Assets	PBITDA/TGA
		Profit Before Tax /Total Net Assets	PBT/TNA
3	Collateral	Net Fixed Assets/Total Net Assets	NFA/TNA
		Gross Fixed Assets /Total Gross Assets	GFA/TGA
		(Net Fixed Assets +Inventory +Accounts Receivable)/ Total Net Assets	(Nfa+Inv+AR)/TNA
		Inventories/Total Net Assets	INV/TNA
4	Volatility	Standard Deviation of Profit Before Interest, Tax, Depreciation & Amortization / Total Gross Assets	SD of PBITDA/TGA
		Coefficient of Variation of Profit Before Interest & Tax/Total Net Assets	COV of PBIT to TNA
5	Growth Rate	Compount Annual Growth Rate of Total Assets	CAGR of TNA
		Compount Annual Growth Rate of Sales	CAGR of Sales
6	Non-Debt Tax Shields	Depreciation /Total Gross Assets	Depr/TGA
7	Debt Service Capacity	Profit Before Interest, Tax& Depreciation/Interest payments	PBDIT/INT
8	Age	Natural Logarithm of Age of firm	Log of age of firm
9	Dividend Payout	Equity Dividend /Profit After Tax	Equity Div/PAT
10	Liquidity	Current Assets /Current Liabilities	CA/CL
11	Net Exports	Net Exports /Sales	Net exp/Sales
12	Cost of Equity	Dividend Payment/ Share Capital+Reserves	DIV/SC
13	Uniqueness	Research & Development Expenditure / Sales.	R&D /Sales
14	Cost of Borrowing	Interest Payment/Total Debt	INT /DEBT

Twenty-Two indicators which had significant impact on Debt Ratios have been selected for conducting multiple regressions, although the number of independent factors still remains the same. The Table-5.17 lists the Determinants of Capital Structure and their indicators used for multiple regression analysis.

For conducting multiple regressions, four measures of Capital Structure are selected, which includes two Short Term Debt measures, one Long Term Debt measure and one Total Debt measure. The Capital Structure measures selected for conducting multiple regressions are:

Table 5.18			
Debt Ratios Selected for Multiple Regression Analysis			
Sr. No	**Dependent Variable (Debt Ratios)**	**Abbreviation**	**Category**
1	Short Term Debt1/ Total Assets	STD1/TA	Short Term Debt Ratio
2	Total Trade Credit & Equivalent / Total Assets	TC&E/TA	Short Term Debt Ratio
3	Long Term Debt/ Total Assets	LTD/TA	Long Term Debt Ratio
4	Total Liabilities / Total Assets	TL/TA	Total Debt Ratio

Using various combinations of selected Determinants represented by twenty-two indicators, several regression runs were conducted for each Debt measure. 'Thirty-Three' multiple regression runs for each Short Term Debt measure (Table 5.29 and Table 5.30) and 'Thirty' multiple regression runs for Long Term Debt and Total Debt Measure each (Table 5.31 and Table 5.32) were conducted. Out of these regression runs, only those regression runs which were able to explain around 50% of variation in the Debt Ratio are reported. Several combinations resulted in same predictions; hence only one of the regression run results each for such combinations is reported. For all the reported regression runs, results of both standard regression model and stepwise regression results are reported.

From the correlation matrix (Table 5.24), it was noticed that Depr/TGA was highly correlated with GFA/TGA (.644) and DIV/SC was highly correlated with PBITDA/TGA (.666) and PBT/TNA (.676) respectively. There would be problem of multicollinearity if these indicators are taken together in a regression run. However, multicollinearity tests (Variance Inflationary Factors) indicate that multicollinearity is not a problem as 'VIF' for all indicators ranges from a high of 2.34 to a low of 1.00 respectively, which shows that , there is little evidence of multicollinearity among the indicators as 'VIF' is well within limits.

From the correlation matrix (Table No. 5.24), it is also observed that high correlation exists between various indicators of a same independent variable and care is taken that no two indicators of the same independent variable are taken together while performing multiple regressions, with the exception- in case of Short Term Debt Ratios where (NFA/TNA or GFA/TGA) and (INV/TNA) both representing Collateral effect are taken together. This was done, as it is found out from simple regressions (Table 5.16), that Inventories had positive impact on Short Term Debt measures while (NFA/TNA or GFA/TGA) has negative impact on Short Term Debt measures.

Care is also taken to see that if one indicator uses gross assets as its base, then it is not combined with an indicator having net assets as its base. Hence PBT/TNA is not combined with GFA/TGA, Log of GTFA is not combined with INV/TNA, PBITDA/TGA not combined with NFA/TNA and INV/TNA, PBT/TNA is not combined with SD of PBITDA/TGA and with Depr/TGA, NFA/TNA not combined with SD of PBITDA/TGA, GFA/TGA not combined with CAGR of TNA, CAGR of TNA not combined with Depr/TGA.

5.3.1 Results of Multiple Regressions of STD1/TA Ratio

Table 5.19 presents the results of multiple regression runs conducted on short term debt measure STD1/TA ratio. Out of *thirty-three* multiple regression runs (Table 5.29) conducted on STD1/TA ratio, six significant regression runs conducted on STD1/TA ratio are reported (Refer VIF Table 5.25). The value of R^2 ranges from 0.478 in Run 1^b to 0.589 in Run 6^b which indicates that a maximum of 58.9% variations in STD1/TA ratio are explained by significant indicators selected in Regression Run 6^b.

Collateral/Tangibility: In all the regression runs, it is found out that NFA/TNA has significant negative impact on STD1/TA ratio, the 't' statistic being significant at 1% level of significance. In Run 3, Run 5 and Run 6, along with NFA / TNA to denote collateral effect, INV/TNA is also included in the regression run, which yields interesting results. While the collateral or tangibility effect on STD1/TA as measured by NFA/TNA results in significant negative impact on STD1/TA ratio, collateral effect as measured by INV/TNA results in significant positive impact on STD1/TA ratio, the 't' statistic being significant at 1% level of significance. This indicates that collaterals in the form of fixed assets which are long term assets are not used to obtain short term finance. At the same time, higher level of Inventories are supported by Short Term Debt and Inventories in turn act as Collaterals to avail Short Term Debt and hence the positive impact of INV/TNA on STD1/TA ratio. These results are consistent with the findings of Bevan & Danbolt (2000)[1], Pandey I.M (2001)[6], Song (2005)[4] who had found that tangibility when measured in terms of NFA/TA ratio had negative impact on Short Term Debt.

Profitability: The impact of profitability factor as measured by PBT/TNA is significant at 1% level of significance in all the regression runs and its coefficient is negative indicating that profitability has negative impact on Short Term Debt Ratios, which is in line with the Pecking-Order Theory.

Volatility: Volatility indicator COV of PBIT/TNA has significant positive impact on STD1/TA ratio in all the regression runs, the 't' statistic being significant at 1% level of significance. This indicates that firms with volatile earnings prefer to borrow short term funds. This finding is consistent with the results of Pandey I.M (2001)[6].

Liquidity: Liquidity as indicated by CA/CL is a significant factor at 1% level of significance and has negative impact on STD1/TA ratio in all the regression runs reported. This indicates that higher the proportion of liquid assets, the company may resort to low levels of short term debt in their Capital Structure.

Cost of Equity: DIV/SC, which is an indicator of cost of equity, has a significant positive impact on STD1/TA ratio in three runs, the 't' statistic being significant at 1% level of significance. This indicates that as the Cost of Equity in the form of dividend payments increase, FDI Companies prefer Short Term Debt Funds for financing purposes.

Growth Rate: Growth rate as measured in terms of CAGR of sales is significant at 5% level of significance in Run6 and has positive impact on STD1/TA ratio indicating that growth in sales would mean greater need of Short Term Debt Funds needed to fuel the growth in sales and hence the positive relationship. These results are consistent with findings of Pandey I.M (2001)[6] who had found that Malaysian firms employ short term debt to finance their growth.

The impact of indicators for **Size, Age, Dividend Payout, Net Exports/Sales,** and **Uniqueness and Cost of Borrowing of** a firm is found insignificant on STD1/TA ratio.

Table 5.19								
Results of Multiple Regression of 140 FDI Companies In India on Dependent variable - STD1/TA								
	Run 1[a]	Run 1[b]		Run 2[a]	Run 2[b]		Run3[a]	Run 3[b]
Intercept	0.704	0.603	Intercept	0.695	0.656	Intercept	0.640	0.491
Log of sales	0.013 (1.659) [0.100]	Excluded	Log of sales	0.017 (2.209)* [0.029]	Excluded	Log of sales	0.003 (0.325) [0.746]	Excluded
PBT/TNA	—	—	PBT/TNA	-0.357 (-2.619)** [0.010]	-0.359 (-3.029)** [0.003]	PBT/TNA	—	—
NFA/TNA	-0.449 (-6.468)** [.000]	-0.451 (-7.814)** [.000]	NFA/TNA	-0.498 (-7.145)** [.000]	-0.491 (-8.524)** [.000]	NFA/TNA	-0.386 (-5.641)** [.000]	-0.351 (-5.833)** [.000]
INV/TNA	—	—	INV/TNA	—	—	INV/TNA	0.465 (4.037)** [.000]	0.407 (4.006)** [.000]
COV of PBIT to TNA	0.033 (4.287)** [.000]	0.036 (4.925)** [.000]	COV of PBIT to TNA	0.028 (3.689)** [.000]	0.656 (3.965)** [.000]	COV of PBIT to TNA	0.031 (4.109)** [.000]	0.034 (4.853)** [.000]
CAGR of TNA	0.704 (-2.513)* [0.013]	Excluded	CAGR of TNA	-0.217 (-1.636) [0.104]	Excluded	CAGR of sales	-0.007 (-0.060) [0.952]	Excluded
Log of age of firm	-0.034 (-1.406) [0.162]	Excluded	Log of age of firm	-0.029 (-1.192) [0.236]	Excluded	Log of age of firm	-0.039 (-1.545) [0.125]	Excluded
Equity Div/PAT	-0.022 (-0.602) [0.548]	Excluded	Equity Div/PAT	-0.001 (-0.017) [0.986]	Excluded	Equity Div/PAT	(-0.014) (-0.401) [0.689]	Excluded
CA/CL	-0.027 (-4.279)** [.000]	-0.029 (-5.306)** [.000]	CA/CL	-0.025 (-4.049)** [.000]	0.656 (-5.167)** [.000]	CA/CL	-0.032 (-5.260)** [.000]	-0.029 (-5.586)** [.000]
Net exp/Sales	0.02 (0.400) [0.690]	Excluded	Net exp/Sales	0.037 (0.773) [0.441]	Excluded	Net exp/Sales	0.051 (1.042) [0.300]	Excluded
R&D/Sales	-0.852 (-1.247) [0.215]	Excluded	R&D/Sales	-0.750 (-1.127) [0.262]	Excluded	R&D/Sales	-0.446 (-0.668) [0.506]	Excluded
INT/DEBT	0.023 (0.152) [0.880]	Excluded	INT/DEBT	0.046 (0.303) [0.762]	Excluded	INT/DEBT	-0.041 (-0.266) [0.791]	Excluded
DIV/SC	0.070 (0.389) [0.698]	Excluded	DIV/SC	—	—	DIV/SC	0.052 (0.300) [0.765]	Excluded
R^2	0.525	0.49	R^2	0.549	0.522	R^2	0.560	0.544
Adjusted R^2	0.484	0.478	Adjusted R^2	0.510	0.508	Adjusted R^2	0.518	0.530
F statistic	12.874** [.000]	43.479** [.000]	F statistic	14.156** [.000]	36.864** [.000]	F statistic	13.446** [.000]	40.228** [.000]

[a] Multiple Regression, [b] Stepwise Regression,

* indicates significance at 5% level, ** indicates significance at 1% level,

(t-statistics), [p-value]

Table No. 5.19 Continued.....								
Results of Multiple Regression of 140 FDI Companies In India on Dependent variable - STD1/TA								
	Run4[a]	**Run4[b]**		**Run5[a]**	**Run5[b]**		**Run6[a]**	**Run6[b]**
Intercept	0.700	0.639	Intercept	0.675	0.545	Intercept	0.611	0.528
Log of sales	0.013 (1.746) [0.083]	Excluded	Log of TNA	-0.003 (-0.347) [0.729]	Excluded	Log of TNA	-0.008 (-1.007) [0.316]	Excluded
PBT/TNA	-0.685 (-3.912)** [.000]	-0.723 (-4.639)** [.000]	PBT/TNA	-0.627 (-3.674)** [.000]	-0.623 (-4.064)** [.000]	PBT/TNA	-0.754 (-4.445)** [.000]	-0.754 (-4.661)** [.000]
NFA/TNA	-0.517 (-7.586)** [.000]	-0.497 (-8.961)** [.000]	NFA/TNA	-0.442 (-6.477)** [.000]	-0.411 (-6.911)** [.000]	NFA/TNA	-0.457 (-6.790)** [.000]	-0.447 (-7.364)** [.000]
INV/TNA	—	—	INV/TNA	0.402 (3.636)** [.000]	0.328 (3.325)** [0.001]	INV/TNA	0.401 (3.737)** [.000]	0.353 (3.615)** [.000]
COV of PBIT to TNA	0.027 (3.702)** [.000]	0.029 (4.152)** [.000]	COV of PBIT to TNA	0.025 (3.472)** [.001]	0.028 (4.149)** [.000]	COV of PBIT to TNA	0.024 (3.320)** [0.001]	0.027 (3.902)** [.000]
CAGR of TNA	-0.132 (-0.995) [0.322]	Excluded	CAGR of TNA	0.036 (0.265) [0.791]	Excluded	CAGR of sales	0.247 (2.138)* [0.034]	0.224 (2.257)* [0.026]
Log of age of firm	-0.027 (-1.175) [0.242]	Excluded	Log of age of firm	-0.027 (-1.174) [0.243]	Excluded	Log of age of firm	-0.01 (-0.410) [0.683]	Excluded
Equity Div/PAT	-0.027 (-0.783) [0.435]	Excluded	Equity Div/PAT	-0.015 (-0.464) [0.644]	Excluded	Equity Div/PAT	-0.014 (-0.417) [0.678]	Excluded
CA/CL	-0.022 (-3.569)** [.001]	-0.023 (-4.160)** [.000]	CA/CL	-0.028 (-4.728)** [.000]	-0.024 (-4.494)** [.000]	CA/CL	-0.026 (-4.563)** [.000]	-0.022 (-4.237)** [.000]
Net exp/Sales	0.036 (0.777) [0.439]	Excluded	Net exp/Sales	0.062 (1.344) [0.181]	Excluded	Net exp/Sales	0.062 (1.378) [0.171]	Excluded
R&D/Sales	-0.448 (-0.682) [0.497]	Excluded	R&D/Sales	-0.157 (-0.245) [0.807]	Excluded	R&D/Sales	-0.058 (-0.092) [0.927]	Excluded
INT/DEBT	0.038 (0.257) [0.797]	Excluded	INT/DEBT	-0.054 (-0.379) [0.706]	Excluded	INT/DEBT	-0.004 (-0.028) [0.977]	Excluded
DIV/SC	0.644 (2.868)** [0.005]	0.701 (3.428)** [.001]	DIV/SC	0.636 (2.913)** [0.004]	0.592 (2.958)** 0.004	DIV/SC	0.708 (3.320)** [0.001]	0.652 (3.280)** 0.001
R^2	**0.576**	**0.561**	**R^2**	**0.607**	**0.594**	**R^2**	**0.621**	**0.609**
Adjusted R^2	**0.536**	**0.544**	**Adjusted R^2**	**0.567**	**0.576**	**Adjusted R^2**	**0.582**	**0.589**
F statistic	**14.395** [.000]**	**34.190** [.000]**	**F statistic**	**14.991** [.000]**	**32.473** [.000]**	**F statistic**	**15.872** [.000]**	**29.419** [.000]**

[a] Multiple Regression , [b] Stepwise Regression,

*** indicates significance at 5% level, ** indicates significance at 1% level ,**

(t-statistics) , [p-value]

5.3.2 Results of Multiple Regressions on TC&E /TA Ratio

Table 5.20 presents the results of multiple regression runs conducted on Short Term Debt measure TC&E/TA ratio. Out of *thirty-three* multiple regression runs (Table 5.30) conducted on TC&E/TA ratio, nine significant regression runs conducted on TC&E/TA ratio are reported (Refer VIF Table 5.26). The value of R^2 ranges from a minimum of 0.494 in Run 2^b to 0.655 in Run 9^b which indicates that a maximum of 65.5% variations in TC&E/TA ratio are explained by significant indicators selected in Regression Run 9^b.

Profitability: Out of eight regression runs in which profitability is selected as one of the independent variables, in six regression runs, profitability factor is significant at 1% level of significance and its coefficient is negative indicating that Profitability has negative impact even on TC&E/TA ratio. This indicates that there are sufficient internally generated cash reserves and FDI Companies in India do not prefer to borrow even from short term sources like Trade Credit.

Collateral/Tangibility: The Collateral effect as measured by NFA/TNA or GFA/TGA indicates a negative relationship between tangible fixed assets and Trade Credits & Equivalents and the relationship is significant at 1% level of significance. At the same time in regression Run 9, along with NFA/TNA or GFA/TGA to denote collateral effect, INV/TNA is also included in the regression run and it is found out that while tangible fixed assets have negative impact on TC&E/TA ratio, INV/TNA have positive impact on TC&E/TA ratio. Thus, confirming that higher Inventory levels support the availability of Trade Credits whereas high Collaterals as represented by tangible fixed assets support the availability of Long Term Debt Funds. In Run 2, where (Nfa+Inv+AR)/TNA indicator is used to measure Collateral effect, it denotes a positive impact on STD1/TA ratio which means that for availing Trade Credit, companies Inventories and Account Receivables also act as Collaterals.

Volatility: Volatility indicator COV of PBIT/TNA has significant positive impact on TC&E/TA ratio in almost all the regression runs, the 't' statistic being significant at 1% level of significance. This indicates that firms with volatile earnings prefer to heavily rely on Short Term Trade Credit as a source of finance.

Table 5.20								
Results of Multiple Regression of 140 FDI Companies on Dependent variable - TC&E/TA								
	Run 1[a]	**Run 1[b]**		**Run2[a]**	**Run 2[b]**		**Run3[a]**	**Run3[b]**
Intercept	0.387	0.348	Intercept	0.083	0.044	Intercept	0.159	0.201
Log of sales	0.018 (3.368)** [0.001]	0.014 (3.218)** [0.002]	Log of sales	0.009 (1.503) [0.135]	Excluded	Log of sales	0.007 (1.205) [0.230]	Excluded
PBT/TNA	-0.290 (-3.154)** [0.002]	-0.343 (-4.060)** [.000]	PBT/TNA	-0.080 (-0.718) [0.474]	Excluded	PBT/TNA	-0.126 (-1.257) [0.211]	Excluded
NFA/TNA	-0.327 (-6.956)** [.000]	-0.336 (-8.070)** [.000]	(Nfa+Inv+AR)/TNA	0.072 (1.191) [0.236]	0.111 (2.027)* [0.045]	NFA/TNA	—	—
INV/TNA	—	—	INV/TNA	—	—	INV/TNA	0.306 (3.480)** [0.001]	0.398 (5.234)** [.000]
COV of PBIT to TNA	0.023 (4.480)** [.000]	0.024 (4.796)** [.000]	COV of PBIT to TNA	0.032 (5.455)** [.000]	0.032 (5.736)** [.000]	COV of PBIT to TNA	0.028 (4.990)** [.000]	0.029 (5.327)** [.000]
CAGR of TNA	-0.143 (-1.595) [0.113]	Excluded	CAGR of TNA	-0.162 (-1.545) [0.125]	Excluded	CAGR of TNA	-0.081 (-0.788) [0.432]	Excluded
Log of age of firm	-0.009 (-0.566) [0.572]	Excluded	Log of age of firm	0.025 (1.361) [0.176]	0.035 (2.191)* [0.030]	Log of age of firm	0.010 (0.566) [0.572]	Excluded
Equity Div/PAT	-0.005 (-0.213) [0.831]	Excluded	Equity Div/PAT	0.012 (0.464) [0.643]	Excluded	Equity Div/PAT	0.011 (0.431) [0.667]	Excluded
CA/CL	-0.027 (-6.679)** [.000]	-0.027 (-6.934)** [.000]	CA/CL	-0.026 (-5.460)** [.000]	-0.031 (-7.199)** [.000]	CA/CL	-0.029 (-6.157)** [.000]	-0.033 (-7.914)** [.000]
Net exp/Sales	0.018 (0.566) [0.572]	Excluded	Net exp/Sales	-0.044 (-1.210) [0.228]	Excluded	Net exp/Sales	-0.015 (-0.409) [0.683]	Excluded
R&D/Sales	-0.668 (-1.487) [0.140]	Excluded	R&D/Sales	-1.415 (-2.771)** [0.006]	-1.49 (-2.934)** [0.004]	R&D/Sales	-1.044 (-2.085)* 0.039	Excluded
INT/DEBT	0.203 (2.004)* [0.047]	0.221 (2.253)* [0.026]	INT/DEBT	0.404 (3.558)** [0.001]	0.436 (3.951)** [.000]	INT/DEBT	0.306 (2.713)** [0.008]	0.283 (2.592)* [0.011]
PBDIT/INT	—	—	PBDIT/INT	—	—	PBDIT/INT	—	—
DIV/SC	—	—	DIV/SC	—	—	DIV/SC	—	—
Depr/TGA	—	—	Depr/TGA	—	—	Depr/TGA	—	—
R^2	**0.663**	**0.650**	**R^2**	**0.540**	**0.516**	**R^2**	**0.576**	**0.548**
Adjusted R^2	**0.634**	**0.634**	**Adjusted R^2**	**0.501**	**0.494**	**Adjusted R^2**	**0.539**	**0.535**
F statistic	**22.876**** **[.000]**	**41.168**** **[.000]**	**F statistic**	**13.686**** **[.000]**	**23.610**** **[.000]**	**F statistic**	**15.778**** **[.000]**	**40.921**** **[.000]**

[a] Multiple Regressiona , [b] Stepwise Regression,

*** indicates significance at 5% level, ** indicates significance at 1% level ,**

(t-statistics) , [p-value]

Table 5.20 Continued....								
Results of Multiple Regression of 140 FDI Companies on Dependent variable - TC&E/TA								
	Run4[a]	Run4[b]		Run5[a]	Run5[b]		Run6[a]	Run6[b]
Intercept	0.375	0.424	Intercept	0.341	0.566	Intercept	0.392	0.386
Log of TNA	0.010 (1.616) (0.109)	Excluded	Log of GTFA	0.002 (0.277) [0.782]	Excluded	Log of Sales	0.016 (2.868)** [0.005]	Excluded
PBT/TNA	-0.252 (-2.678)** [0.008]	-0.254 (-3.080)** 0.003	PBITDA/TGA	-0.528 (-3.907)** [.000]	-0.492 (-4.296)** [.000]	PBT/TNA	—	—
NFA/TNA	-0.316 (-6.416)** [.000]	-0.324 (-7.551)** [.000]	GFA/TGA	-0.283 (-5.1240** [.000]	-0.346 (-8.157)** [.000]	NFA/TNA	-0.292 (-6.160)** [.000]	-0.295 (-6.834)** [.000]
INV/TNA	—	—	INV/TNA	—	—	INV/TNA	—	—
COV of PBIT to TNA	0.024 (4.480)** [.000]	0.023 (4.544)** [.000]	SD of PBITDA	0.437 (2.621)** [0.010]	Excluded	COV of PBIT to TNA	0.026 (5.023)** [.000]	0.028 (5.525)** [.000]
CAGR of TNA	-0.108 (-1.109) [0.270]	Excluded	CAGR of sales	0.200 (1.990) [0.049]	Excluded	CAGR of TNA	-0.229 (-2.586)* [0.011]	Excluded
Log of age of firm	0.003 (0.192) [0.848]	Excluded	Log of age	0.028 (1.513) [0.133]	Excluded	Log of age of firm	-0.013 (-0.791) [0.430]	Excluded
Equity Div/PAT	0.002 (0.080) [0.937]	Excluded	Eq Div/PAT	-0.011 (-0.441) [0.660]	Excluded	Equity Div/PAT	-0.015 (-0.585) [0.560]	Excluded
CA/CL	-0.03 (-7.083)** [.000]	-0.032 (-8.364)** [.000]	CA/CL	-0.029 (-6.401)** [.000]	-0.033 (-8.012)** [.000]	CA/CL	-0.029 (-6.902)** [.000]	-0.033 (-8.405)** [.000]
Net exp/Sales	0.006 (0.171) [0.865]	Excluded	Net exp/Sales	-0.025 (-0.664) [0.508]	Excluded	Net exp/Sales	0.007 (0.208) [0.835]	Excluded
R&D/Sales	-0.789 (-1.705) [0.091]	Excluded	R&D/Sales	-0.697 (-1.397) [0.165]	Excluded	R&D/Sales	-0.786 (-1.685) [0.094]	Excluded
INT/DEBT	0.199 (1.897) [0.060]	0.209 (2.057)* [0.042]	INT/DEBT	0.239 (2.093)* [0.038]	Excluded	INT/DEBT	0.190 (1.806) [0.073]	0.215 (2.060)* [0.041]
PBDIT/INT	—	—	PBDIT/INT	-1.71E-05 (-1.173) [0.243]	Excluded	PBDIT/INT	—	—
DIV/SC	—	—	DIV/SC	—	—	DIV/SC	-0.062 (-0.508) [0.612]	Excluded
Depr/TGA	—	—	Depr/TGA	—	—	Depr/TGA	—	—
R^2	0.640	0.623	R^2	0.584	0.533	R^2	0.637	0.596
Adjusted R^2	0.609	0.609	Adjusted R^2	0.544	0.522	Adjusted R^2	0.606	0.584
F statistic	20.713** [.000]	44.241** [.000]	F statistic	14.843** [.000]	51.687** [.000]	F statistic	20.452** [.000]	49.798** [.000]

[a] Multiple Regression , [b] Stepwise Regression,

* indicates significance at 5% level, ** indicates significance at 1% level ,

(t-statistics) , [p-value]

Table 5.20 Continued.....									
Results of Multiple Regression of 140 FDI Companies on Dependent variable - TC&E/TA									
	Run7[a]	**Run7[b]**		**Run 8[a]**	**Run 8[b]**		**Run9[a]**	**Run 9[b]**
Intercept	0.350	0.569	Intercept	0.389	0.35	Intercept	0.336	0.350
Log of GTFA	.000 (0.063) [0.950]	Excluded	Log of sales	0.016 (3.008)** [.000]	0.013 (2.865)** [0.005]	Log of sales	0.009 (1.783) [0.077]	0.010 (2.153)* [0.033]
PBITDA/TGA	-0.854 (-4.740)** [.000]	-0.723 (-4.711)** [.000]	PBT/TNA	-0.451 (-3.760)** [.000]	-0.51 (-4.711)** [.000]	PBT/TNA	-0.51 (-4.267)** [.000]	-0.447 (-4.070) [.000]
GFA/TGA	-0.338 (-5.080)** [.000]	-0.34 (-8.116)** [.000]	NFA/TNA	-0.336 (-7.209)** [.000]	-0.339 (-8.280)** [.000]	NFA/TNA	-0.318 (-6.737)** [.000]	-0.315 (-7.383)** [.000]
INV/TNA	—	—	INV/TNA	—	—	INV/TNA	0.198 (2.582)** [0.011]	0.202 (2.847)** [0.005]
SD of PBITDA	0.422 (2.574)** [0.011]	Excluded	COV of PBIT to TNA	0.023 (4.471)** [.000]	0.024 (4.884)** [.000]	COV of PBIT to TNA	0.021 (4.174)** [.000]	0.022 (4.611)** [.000]
CAGR of sales	0.227 (2.290)* [0.024]	Excluded	CAGR of TNA	-0.101 (-1.113) [0.268]	Excluded	CAGR of sales	0.112 (1.357) [0.177]	Excluded
Log of age	0.029 (1.591) [0.114]	Excluded	Log of age of firm	-0.009 (-0.538) [0.592]	Excluded	Log of age of firm	-0.003 (-0.172) [0.864]	Excluded
Equity Div/PAT	-0.028 (-1.092) [0.277]	Excluded	Equity Div/PAT	-0.009 (-0.757) [0.451]	Excluded	Equity Div/PAT	-0.014 (-0.583) [0.561]	Excluded
CA/CL	-0.027 (-6.049)** [.000]	-0.031 (-7.343)** [.000]	CA/CL	-0.026 (-6.274)** [.000]	-0.025 (-6.372)** [.000]	CA/CL	-0.028 (-6.679)** [.000]	-0.028 (-7.040)** [.000]
Net exp/Sales	-0.011 (-0.301) [0.764]	Excluded	Net exp/Sales	0.018 (0.560) [0.576]	Excluded	Net exp/Sales	0.031 (0.977) [0.330]	Excluded
R&D/Sales	-0.652 (-1.313) [0.192]	Excluded	R&D/Sales	-0.519 (-1.155) [0.250]	Excluded	R&D/Sales	-0.316 (-0.713) [0.477]	Excluded
INT/DEBT	0.262 (2.329)* [0.021]	Excluded	INT/DEBT	0.199 (1.990)* [0.049]	0.211 (2.187)* [0.030]	INT/DEBT	0.19 (1.899) [0.060]	Excluded
PBDIT/INT	-1.23E-05 (-0.853) [0.395]	Excluded	PBDIT/INT	—	—	PBDIT/INT	—	—
DIV/SC	0.398 (2.383)* [0.019]	0.350 (2.224)* [0.028]	DIV/SC	0.316 (2.055)* [0.042]	0.342 (2.405)* [0.018]	DIV/SC	0.347 (2.304)* [0.023]	0.301 (2.123)* [0.036]
Depr/TGA	1.307 (1.566) [0.120]	Excluded	Depr/TGA	—	—	Depr/TGA	—	—
R^2	**0.607**	**0.549**	**R^2**	**0.674**	**0.665**	**R^2**	**0.69**	**0.673**
Adjusted R^2	**0.562**	**0.536**	**Adjusted R^2**	**0.643**	**0.647**	**Adjusted R^2**	**0.658**	**0.655**
F statistic	**13.765** [.000]**	**41.126** [.000]**	**F statistic**	**21.849** [.000]**	**37.382** [.000]**	**F statistic**	**21.611** [.000]**	**38.748** [.000]**

[a] Multiple Regression, [b] Stepwise Regression,
*** indicates significance at 5% level, ** indicates significance at 1% level,**
(t-statistics), [p-value]

Liquidity: Liquidity as indicated by CA/CL is a significant factor at 1% level of significance in all the regression runs reported and has negative impact on TC&E/TA ratio. This indicates that higher the proportion of liquid assets, the company may resort to low levels of Trade Credit as Short Term Fund.

Cost of Borrowing: Cost of Borrowing as measured by INT/DEBT is significant at 1% level of significance in Run 2 and significant at 5% level of significance in Run 1, Run3, Run 4, Run 6 and Run 8. Cost of Borrowing has positive impact on TC&E/TA ratio indicating that as the Cost of Long Term Debt rises, companies resort to Short Term Trade Credit to meet their financing requirements.

Cost of Equity: DIV/SC, which is an indicator of Cost of Equity, has a significant positive impact on TC&E/TA ratio in three runs, the 't' statistic being significant at 1% level of significance. This indicates that as the Cost of Equity in the form of dividend payments increase, FDI Companies prefer Short Term Debt Funds for financing purposes.

Size: Log of Sales, an indicator of size has positive impact on TC&E/TA ratio in regression Run 1 and Run 8, the 't' statistic being significant at 1% level of significance and in Run 9, Log of sales has significant positive impact on TC&E/TA ratio at 5% level of significance. This indicates that as the Size of company in terms of sales increases, its requirement for short term funds to meet the financing requirements of working capital also increase which are met through availing trade credits facilities.

Age: Log of Age of firm enters the model with a positive coefficient in regression Run 2 and is significant at 5% level of significance indicating that mature firms are well established firms who have easier access to short term trade credit. However, while interpreting the results of Age as a Determinant of Debt Ratios, the sample data feature has to be kept in mind which is already pointed out in section 5.4 that youngest age firm in the sample is of 19 years and the oldest firm is of 107 years with a median age of 39.5 years. Inspite of this characteristic of our sample data, Age enters the model with a positive coefficient and this means that Age is an important Determinant of TC&E/TA ratio.

Uniqueness: Uniqueness of a firm as measured by R&D/Sales has negative impact on TC&E/TA ratio and is significant at 1% level of significance in Run 2^b. This indicates that unique firms might be facing difficulties in obtaining trade credits as a source of short term finance.

The indicators of **NDTS, Debt service capacity, Dividend payout, Net Exports,** have insignificant impact on TC&E/TA ratio as indicated by low 't' statistic with high 'p' values. **Growth indicators** also did not enter the model with a significant coefficient although a point to be noted was that Growth when measured in terms of sales had positive impact on TC&E/TA ratio. Whereas, Growth measured as Growth in Total Assets had negative impact on TC&E/TA ratio indicating that Growth in Sales was supported by availing Short Term Credit and Growth in Total Assets denoted increase in Collateral value which supported Long Term Debt.

5.3.3 Results of Multiple Regressions on LTD/TA Ratio

Table No. 5.21 presents the results of multiple regression runs conducted on Long Term Debt measure LTD/TA ratio. Out of *thirty* multiple regressions runs (Table 5.31) conducted on LTD/TA ratio, six significant regression runs are reported (Refer VIF Table 5.27). The value of R^2 ranges from a minimum of 0.488 in Run 2^b to 0.648 in Run 3^b which indicates that a maximum of 64.8% variations in LTD/TA ratio are explained by significant indicators selected in Regression Run 3^b.

Size: Size as measured by Log of TNA has positive impact on LTD/TA ratio and 't' statistic is significant at 1% level of significance in Run 2 and Run 3 and at 5% level of significance in Run 5. Size as measured by Log of GTFA is also significant at 1% level of significance in Run4 and Run6 and has positive impact on the long term debt ratio. This finding is consistent with the results of Rajan & Zingales (1995)[7], Bevan & Danbolt (2000)[1], Booth *et.al* (2001)[8], Bhaduri (2002)[5], Baral (2004)[9] and Jong *et.al* (2005)[10]. This finding is also consistent with the predictions of Trade-Off Theory which says that large firms with tangible assets tend to borrow more.

Collateral/Tangibility: All the indicators of Collateral effect have positive impact on LTD/TA ratio and are highly statistically significant at 1% level of significance. This finding is consistent with the results of Bevan & Danbolt (2000)[1], Drobetz & Fix (2003)[11] and Jong *et.al* (2005)[10]. Both Trade-Off Theory and Pecking Order Theory predict positive effect of Collaterals on Long Term Debt Ratios. This indicates that companies having high Collaterals will tend to borrow more from Long Term Debt sources.

Table 5.21								
Results of Multiple Regression of 140 FDI Companies on Dependent variable - LTD/TA								
	Run 1[a]	**Run 1[b]**		**Run2[a]**	**Run 2[b]**		**Run3[a]**	**Run3[b]**
Intercept	0.087	0.058	Intercept	0.255	0.215	Intercept	0.124	0.004
Log of sales	0.009 (1.496) [0.137]	Excluded	Log of TNA	0.030 (4.037)** [.000]	0.029 (4.599)** [.000]	Log of TNA	0.019 (3.206)** [0.002]	0.500 (11.083)** [.000]
PBT/TNA	-0.672 (-6.511)** [.000]	-0.639 (-7,379)** [.000]	PBT/TNA	-0.724 (-5.729)** [.000]	-0.748 (-6.689)** [.000]	PBT/TNA	-0.615 (-6.021)** [.000]	-0.706 (-8.012)** [.000]
NFA/TNA	0.476 (9.023)** [.000]	0.528 (11.773)** [.000]	(Nfa+Inv+AR)/TNA	0.22 (3.241)** [0.001]	0.219 (3.283)** [0.001]	NFA/TNA	0.461 (8.776)** [.000]	0.014 (2.726)** [0.007]
COV of PBIT to TNA	0.004 (0.776) [0.439]	Excluded	COV of PBIT to TNA	-0.007 (-1.066) [0.289]	Excluded	COV of PBIT to TNA	0.005 (0.854) (0.395)	Excluded
CAGR of TNA	0.092 (0.911) [0.364]	Excluded	CAGR of TNA	-0.019 (-0.152) [0.880]	Excluded	CAGR of Sales	-0.094 (-1.034) [0.303]	Excluded
Log of age of firm	-0.011 (0.615) [0.539]	Excluded	Log of age of firm	-0.071 (-3.477)** [0.001]	-0.067 (-3.510)** [0.001]	Log of age of firm	-0.028 (-1.517) [0.132]	Excluded
Equity Div/PAT	-0.033 (-1.281) [0.202]	Excluded	Equity Div/PAT	-0.052 (-1.684) [0.095]	Excluded	Equity Div/PAT	-0.039 (-1.541) [0.126]	Excluded
CA/CL	-0.001 (-0.138) [0.891]	Excluded	CA/CL	-0.003 (-0.516) [0.607]	Excluded	CA/CL	-1.34E-05 (-0.003) [0.988]	Excluded
Net exp/Sales	-0.074 (-2.030)* [0.023]	-0.078 (-2.307)* [0.044]	Net exp/Sales	0.034 (0.820) [0.414]	Excluded	Net exp/Sales	-0.074 (-2.093)* [0.038]	-0.068 (-2.052)* [0.042]
R&D/Sales	0.508 (1.007) [0.316]	Excluded	R&D/Sales	1.277 (2.178)** [0.031]	1.272 (2.204)* [0.029]	R&D/Sales	0.394 (0.801) [0.425]	Excluded
INT/DEBT	-0.141 (-1.238) [0.218]	Excluded	INT/DEBT	-0.415 (-3.191)** [0.002]	-0.415 (-3.312)** [0.001]	INT/DEBT	-0.177 (-1.584) [0.116]	Excluded
PBDIT/INT	---	---	PBDIT/INT	---	---	PBDIT/INT	---	---
DIV/SC	---	---	DIV/SC	---	---	DIV/SC	---	---
Depr/TGA	---	---	Depr/TGA	---	---	Depr/TGA	---	---
R^2	**0.666**	**0.64**	**R^2**	**0.526**	**0.510**	**R^2**	**0.680**	**0.659**
Adjusted R^2	**0.637**	**0.632**	**Adjusted R^2**	**0.485**	**0.488**	**Adjusted R^2**	**0.652**	**0.648**
F statistic	**23.184** [.000]**	**80.520** [.000]**	**F statistic**	**12.892** [.000]**	**23.057** [.000]**	**F statistic**	**24.681** [.000]**	**65.104** [.000]**

[a] Multiple Regression, [b] Stepwise Regression,
*** indicates significance at 5% level, ** indicates significance at 1% level,**
(t-statistics), [p-value]

Table 5.21 Continued......								
Results of Multiple Regression of 140 FDI Companies on Dependent variable - LTD/TA								
	Run4[a]	**Run4[b]**		**Run5[a]**	**Run5[b]**		**Run6[a]**	**Run6[b]**
Intercept	0.226	0.197	Intercept	0.098	-0.017	Intercept	0.255	0.232
Log of GTFA	0.021 (3.054)** [0.003]	0.021 (3.312)** [.001]	Log of TNA	0.018 (2.581)* [0.011]	Excluded	Log of GTFA	0.02 (3.126)** [0.002]	0.017 (2.972)** [0.004]
PBITDA/TGA	-0.651 (-4.180)** [.000]	-0.764 (-5.694)** [.000]	—	—	—	PBITDA/TGA	-0.289 (-1.468) [0.145]	-0.538 (-4.005)** [.000]
GFA/TGA	0.347 (5.456)** [.000]	0.356 (6.233)** [.000]	NFA/TNA	0.519 (9.118)** [.000]	0.595 (12.136)** [.000]	GFA/TGA	0.543 (7.458)** [.000]	0.552 (7.687)** [.000]
SD of PBITDA	0.178 (0.927) [0.356]	Excluded	COV of PBIT to TNA	0.01 (1.629) [0.106]	0.014 (2.356)* [0.020]	SD of PBITDA	0.159 (0.890) [0.375]	Excluded
CAGR of sales	-0.027 (-0.230) [0.818]	Excluded	CAGR of TNA	-0.186 (-1.703) [0.091]	Excluded	CAGR of sales	-0.034 (-0.315) [0.753]	Excluded
Log of age	-0.047 (-2.192)* [0.030]	-0.048 (-2.545)* [0.002]	Log of age of firm	-0.029 (-1.499) [0.136]	Excluded	Log of age	-0.055 (-2.737)** [0.007]	-0.049 (-2.753)** [0.007]
Equity Div/PAT	-0.061 (-2.079)* [0.040]	Excluded	Equity Div/PAT	-0.038 (-1.309) [0.193]	Excluded	Eq Div/PAT	-0.052 (-1.824) [0.071]	Excluded
CA/CL	-0.004 (-0.744) [0.458]	Excluded	CA/CL	-0.004 (-0.810) [0.419]	Excluded	CA/CL	-0.004 (-0.843) [0.401]	Excluded
Net exp/Sales	-0.061 (-1.410) [0.161]	Excluded	Net exp/Sales	-0.091 (-2.324)* [0.022]	-0.119 (-3.229)** [0.002]	Net exp/Sales	-0.105 (-2.549)* [0.012]	-0.091 (-2.451)** [0.016]
R&D/Sales	0.668 (1.160) [0.248]	Excluded	R&D/Sales	0.063 (0.114) [0.910]	Excluded	R&D/Sales	0.920 (1.696) [0.092]	Excluded
INT/DEBT	-0.202 (-1.534) [0.127]	Excluded	INT/DEBT	-0.167 (-1.344) [0.181]	Excluded	INT/DEBT	-0.272 (-2.205) [0.029]	-0.227 (-1.892) [0.061]
PBDIT/INT	1.49E-06 (-0.089) [9.29E-01]	Excluded	PBDIT/INT	—	—	PBDIT/INT	-5.66E-06 (-0.360) [0.719]	Excluded
DIV/SC	—	—	DIV/SC	-0.479 (-3.362)** [0.001]	-0.462 (-3.594)** [.000]	DIV/SC	-0.219 (-1.199) [0.233]	Excluded
Depr/TGA	—	—	Depr/TGA	—	—	Depr/TGA	-4.248 (-4.655)** [.000]	-3.976 (-4.414)** [.000]
R^2	**0.565**	**0.530**	**R^2**	**0.602**	**0.568**	**R^2**	**0.630**	**0.600**
Adjusted R^2	**0.524**	**0.516**	**Adjusted R^2**	**0.568**	**0.555**	**Adjusted R^2**	**0.589**	**0.579**
F statistic	**13.742** [.000]**	**38.082** [.000]**	**F statistic**	**17.629** [.000]**	**44.386** [.000]**	**F statistic**	**15.204** [.000]**	**28.300** [.000]**
[a] Multiple Regression, [b] Stepwise Regression, * indicates significance at 5% level, ** indicates significance at 1% level, (t-statistics), [p-value]								

Profitability: Profitability as measured by PBT/TNA or PBITDA/TGA has significant negative impact on LTD/TA ratio, the 't' statistic being significant at 1% level of significance. This result confirms the prediction of Pecking Order Theory where highly profitable firms prefer to use internally generated funds out of surplus profit to finance their investments and hence resort to lower levels of debt in their Capital Structure. This finding is consistent with the results of Pandey I.M (2001), Drobetz & Fix (2003)[11] and Song (2005)[4].

Age: Log of Age has significant negative impact on Long Term Debt ratio, the 't' statistic being significant at 1% level of significance in Run 2 and Run 6 and at 5% level of significance in Run 4. Age has positive impact on TC&E/TA ratio but has negative impact on LTD/TA ratio. Age factor is also negatively related to Growth rate (Table 5.24 for correlation matrix). This indicates that mature well established firms might not have sufficient growth opportunities, hence might not need long term debt funds. They may also have sufficient built in internal reserves and might not need to borrow long term funds. This result supports the Pecking Order Theory.

Net Exports/Sales: It is important to note that although the impact of Net exports / Sales on LTD/TA ratio in simple regression (Table 5.8) is insignificant, out of six multiple regression runs on LTD/TA ratio reported, Net Exports/Sales has negative impact and becomes a significant predictor of LTD/TA ratio at 5% level of significance for Run 1[b], Run 3[b] and 6[b] respectively and is significant at 1% level of significance in Run 5[b]. This must be due to the fact that Net Exporters can avail tax concessions and other benefits and hence do not need to resort to Long Term Debt funds for financing purposes.

Volatility: Volatility indicator has positive impact on LTD/TA ratio, significant at 5% level of significance in (Run 5, Table 5.21) which means that FDI Companies in India are undertaking risks in spite of volatile profits. This finding is consistent with the results of Jong *et.al* (2005)[10]. This might also be an indication that these companies already have created sufficient internally generated reserves and hence have the ability to undertake risky investments and hence the positive relationship between volatility and Long Term Debt ratio.

Uniqueness: Uniqueness of a firm as measured by R&D/Sales has positive impact on LTD/TA ratio and is significant at 5% level of significance in regression Run 2. This indicates that a unique firm which is incurring huge expenditures on research and development needs funds to finance these expenditures and these firms rely on Long Term Debt for their financing requirements.

Cost of Borrowings: Cost of Borrowings indicator INT/DEBT has significant negative impact on LTD/TA ratio in Run 2 and is significant at 1% level of significance which is consistent with the results of Bhole & Mahakud (2004)[12] who had found significant negative impact of Cost on Borrowings on leverage. It seems that FDI Companies shift their preferences to Short Term Trade Credit when Cost of Borrowings increase and this is confirmed by results of regressions on TC&E/TA ratio (Table 5.20).

Cost of Equity: In Run 5, Table 5.21, the regression coefficient of Cost of Equity as indicator DIV/SC has negative sign and the 't' statistic is significant at 1% level of significance. This result indicates that even if Cost of Equity increases, FDI Companies in India do not resort to Long Term Debt.

It can be observed that both Determinants- Cost of Equity and Cost of Borrowing have negative impact on LTD/TA ratio. Cost of Equity has positive impact on STD1/TA ratio (Table 5.19) and on TC&E/TA ratio (Table 5.20) and Cost of Borrowing has positive impact on TC&E/TA ratio. At the same time profitability has negative impact on all the three Debt Ratios: STD1/TA, TC&E/TA and LTD/TA. This means that even if a company has to pay high Cost on Equity, it does not resort to Long Term Debt. And if Cost of Borrowings increases, it does not resort to Equity but may resort to Short Term Debt Funds if needed. The companies also might be having sufficient internally generated funds to fall back upon as it can be observed that FDI Companies in India have not issued much Equity during the study period (Table 4.2.2, Chapter-4). A look at the trend of Reserve and Surplus indicates that internally generated reserves of FDI Companies are constantly increasing during the study period which explains the results of regression on Debt Ratios. The sample FDI Companies have sufficient internal reserves and hence if Cost of Borrowings or Cost of Equity increases, these companies either temporarily meet their funding requirements through very short term funds like trade credits or use their internal reserves.

Non Debt Tax Shields: The estimated coefficient of NDTS measure – Depr/TGA is significant in regression Run 6 and has significant negative impact on LTD/TA ratio, the 't' statistic being significant at 1% level of significance. Surprisingly the results of simple regression on LTD/TA ratio indicate positive impact of Depr/TGA on LTD/TA ratio.

This might be due to the fact that the indicator Depr/TGA is not a direct estimate of NDTS. When entered into simple linear regression with LTD/TA, the coefficient of Depr/TGA has a positive sign indicating that as fixed assets increase, depreciation also increases and since fixed assets have positive impact on LTD/TA ratio, Depr/TGA also results in positive relationship. At the same time, when Depr/TGA is entered in multiple regression model along with other Determinants, it enters the model with a significant negative coefficient which confirms that depreciation act as tax shield and hence the negative impact of NDTS on the LTD/TA ratio.

The impact of indicators for **Growth Rate, Debt Service Capacity, Dividend Payout** and **Liquidity** of a firm is found insignificant on LTD/TA ratio.

5.3.4 Results of Multiple Regressions on TL/TA Ratio

Table 5.22 presents the results of multiple regression runs conducted on Total Debt measure TL/TA ratio. Out of *thirty* multiple regression runs (Table 5.32) conducted on TL/TA ratio; six significant regression runs are reported (Refer VIF Table 5.28). The value of R^2 ranges from a minimum of 0.531 in Run 4^b to 0.581 in Run 5^b which indicates that a maximum of 58.1% variations in TL/TA ratio are explained by significant indicators selected in Regression Run 5^b.

Profitability: Profitability indicators have significant negative impact on TL/TA ratio in all the regression runs and the 't' statistic is significant at 1% level of significance. This indicates that pecking order theory is applicable to FDI Companies in India as profitability factor has negative impact on all Debt Ratios (Table 5.19, 5.20 & 5.21).

Collateral / Tangibility: Surprisingly collateral indicator NFA/TNA did not prove to be an important Determinant of TL/TA ratio but along with Inventories and Accounts receivables, it entered the model with a positive coefficient and the 't' statistic was significant at 1% level of significance in Run1 and Run5. INV/TNA alone also had positive impact on TL/TA ratio and the 't' statistic was significant at 1% level of significance. This might be due to the fact that among the Total Liabilities, a major contribution comes from Short Term Debt Funds especially Current Liabilities which are normally supported by Collaterals such as Inventory and Accounts Receivables and hence the positive impact on TL/TA ratio. NFA/TNA as a Collateral is used to obtain Long Term Debt funds as observed from the regression results in Table 5.20 hence does not have a significant influence on TL/TA ratio.

Volatility: Contrary to expectations, Volatility indicator has positive impact on all the Debt Ratios and from Table 5.22 also; it is observed that it has positive impact on TL/TA ratio in all the regression runs and is statistically significant at 1% level of significance. This indicates that in-spite of fluctuations in profits; FDI Companies continue to borrow which means that these companies have already built in sufficient reserves in the form of retained profits which they used to repay the loans whenever they have insufficient cash flows.

Growth Rate: Growth rate indicators have positive impact on TL/TA ratio in Run 3 and Run 6 and 't' statistic is significant at 5% level of significance and the results are consistent with the finding of Pandey I.M (2001)[6] and Baral (2004)[10].

Liquidity indicator CA/CL has negative impact on TL/TA ratio and the 't' statistic is significant in all the regressions at 1% level of significance. This again might be due to the fact that a major contribution to Total Liabilities comes from Short Term Debt Funds and Trade Credits and hence if there is sufficient liquidity, the company may need to borrow less.

Size: As regards to Size indicator – Log of Sales, the estimated coefficient is significant in only one regression and has positive impact on TL/TA ratio, the 't' statistic being significant at 5% level of significance. The findings are consistent with the results of Bevan & Danbolt (2000)[1] who have also found significant positive relationship between company size and total liabilities.

Liquidity: Liquidity has significant negative impact on TL/TA ratio in all the reported regression runs and is significant at 1% level of significance which indicates that greater the liquidity, lower will be the dependence on debt funds.

Cost of Equity: Cost of Equity has a significant positive impact on TL/TA ratio and the 't' statistic is significant at 1% level of significance. This might also be due to the fact that a major proportion of Total Liabilities come from Short Term Debt and Current Liabilities and when Cost of Equity increases, companies prefer Short Term Debt Funds as observed in Table 5.20. Since increase in Cost of Equity had a negative impact on LTD/TA ratio (Table 5.21), the results confirm the belief that when Cost of Equity increases, FDI Companies in India either resort to Short Term Borrowings or prefer internal funds but do not resort to Long Term Debt funds.

Table 5.22								
Results of Multiple Regression of 140 FDI Companies on Dependent variable - TL/TA								
	Run 1[a]	Run 1[b]		Run 2[a]	Run 2[b]		Run3[a]	Run 3[b]
Intercept	0.512	0.422	Intercept	0.804	0.697	Intercept	0.781	0.618
Log of sales	0.019 (2.294)** [0.023]	Excluded	Log of sales	0.019 (2.300)* (0.023)	Excluded	Log of sales	0.018 (2.104)* [0.037]	Excluded
PBT/TNA	-0.797 (-5.103)** [.000]	-0.775 (-5.655)** [.000]	PBT/TNA	-1.016 (-7.044)** [.000]	-0.984 (-7.661)** [.000]	PBT/TNA	-1.038 (-7.134)** [.000]	-1.110 (-8.282)** [.000]
(Nfa+Inv+AR)/TNA	0.329 (3.915)** [.000]	0.367 (4.491)** [.000]	INV/TNA	0.53 (4.176)** [.000]	0.470 (4.224)** [.000]	INV/TNA	0.534 (4.298)** [.000]	0.463 (4.287)** [.000]
COV of PBIT to TNA	0.034 (4.160)** [.000]	0.034 (4.286)** [.000]	COV of PBIT to TNA	0.028 (3.385)** [0.001]	0.029 (3.572)** [.000]	COV of PBIT to TNA	0.027 (3.345)** [0.001]	0.028 (3.501)** [0.001]
CAGR of TNA	-0.125 (-0.854) [0.395]	Excluded	CAGR of TNA	0.017 (0.114) [0.909]	Excluded	CAGR of sales	0.077 (0.567) [0.571]	0.292 (2.549)* [0.012]
Log of age of firm	-0.037 (-1.486) [0.140]	Excluded	Log of age of firm	-0.063 (-2.454)* [0.015]	Excluded	Log of age of firm	-0.057 (-2.092)* [0.038]	Excluded
Equity Div/PAT	-0.02 (-0.537) [0.592]	Excluded	Equity Div/PAT	-0.030 (-0.813) [0.418]	Excluded	Equity Div/PAT	-0.028 (-0.760) [0.449]	Excluded
CA/CL	-0.028 (-4.135)** [.000]	-0.033 (-5.483)** [.000]	CA/CL	-0.031 (-4.539)** [.000]	-0.034 (-5.609)** [.000]	CA/CL	-0.031 (-4.535)** [.000]	-0.031 (-5.190)** [.000]
Net exp/Sales	-0.017 (-0.330) [0.742]	Excluded	Net exp/Sales	0.018 (0.347) [0.729]	Excluded	Net exp/Sales	0.017 (0.329) [0.743]	Excluded
R&D/Sales	-0.388 (-0.544) [0.588]	Excluded	R&D/Sales	0.320 (0.443) (0.658)	Excluded	R&D/Sales	0.325 (0.451) [0.653]	Excluded
INT/DEBT	-0.069 (-0.437) [0.663]	Excluded	INT/DEBT	-0.247 (-1.517) [0.132]	-0.342 (-2.137)* [0.034]	INT/DEBT	-0.231 (-1.407) [0.162]	Excluded
DIV/SC	---	---	DIV/SC	---	---	DIV/SC	---	---
R^2	0.583	0.56	R^2	0.589	0.556	R^2	0.59	0.562
Adjusted R^2	0.547	0.547	Adjusted R^2	0.554	0.539	Adjusted R^2	0.555	0.546
F statistic	16.282** [.000]	43.006** [.000]	F statistic	16.692** [.000]	33.531** [.000]	F statistic	16.761** [.000]	34.371** [.000]

[a] Multiple Regression, [b] Stepwise Regression,

* indicates significance at 5% level, ** indicates significance at 1% level,

(t-statistics), [p-value]

Table 5.22 Continued....								
Results of Multiple Regression of 140 FDI Companies on Dependent variable - TL/TA								
	Run4[a]	Run4[b]		Run5[a]	Run5[b]		Run6[a]	Run6[b]
Intercept	0.789	0.632	Intercept	0.503	0.406	Intercept	0.792	0.608
Log of sales	0.021 (2.339)** [0.021]	0.016 (2.135)* [0.035]	Log of sales	0.014 (1.723) [0.087]	Excluded	Log of sales	0.015 (1.768) [0.079]	Excluded
PBT/TNA	-1.457 (-7.192)** [.000]	-1.466 (-8.176)** [.000]	PBT/TNA	-1.198 (-6.187)** [.000]	-1.177 (-6.691)** [.000]	PBT/TNA	-1.395 (-7.565)** [.000]	-1.491 (-8.170)** [.000]
NFA/TNA	-0.043 (-0.551) [0.583]	Excluded	(Nfa+Inv+AR)/TNA	0.324 (4.002)** [.000]	0.361 (4.595)** [.000]	INV/TNA	0.508 (4.137)** [.000]	0.418 (3.884)** [.000]
COV of PBIT to TNA	0.032 (3.761)** [.000]	0.035 (4.257)** [.000]	COV of PBIT to TNA	0.034 (4.292)** [.000]	0.035 (4.505)** [.000]	COV of PBIT to TNA	0.028 (3.508)** [0.001]	0.031 (3.955)** [.000]
CAGR of TNA	-0.009 (-0.059) [0.953]	Excluded	CAGR of TNA	-0.020 (-0.137) [0.891]	Excluded	CAGR of TNA	0.112 (0.758) [0.450]	0.288 (2.187)* [0.030]
Log of age of firm	-0.039 (-1.439) [0.153]	Excluded	Log of age of firm	-0.034 (-1.383) [0.169]	Excluded	Log of age of firm	-0.058 (-2.346)* [0.021]	Excluded
Equity Div/PAT	-0.068 (-1.693) [0.093]	Excluded	Equity Div/PAT	-0.052 (-1.392) [0.166]	Excluded	Equity Div/PAT	-0.061 (-1.628) [0.106]	Excluded
CA/CL	-0.021 (-3.053)** [0.003]	-0.022 (-3.326)** [0.001]	CA/CL	-0.024 (-3.594)** [.000]	-0.027 (-4.474)** [.000]	CA/CL	-0.027 (-3.993)** [.000]	-0.027 (-4.387)** [.000]
Net exp/Sales	-0.039 (-0.729) [0.468]	Excluded	Net exp/Sales	-0.023 (-0.470) [0.639]	Excluded	Net exp/Sales	0.010 (0.198) [0.843]	Excluded
R&D/Sales	0.151 (0.199) [0.843]	Excluded	R&D/Sales	-0.061 (-0.088) [0.930]	Excluded	R&D/Sales	0.606 (0.860) [0.392]	Excluded
INT/DEBT	-0.102 (-0.600) [0.549]	Excluded	INT/DEBT	-0.065 (-0.426) [0.671]	Excluded	INT/DEBT	-0.236 (-1.498) [0.137]	Excluded
DIV/SC	0.834 (3.214)** [0.002]	0.718 (2.985)** [0.003]	DIV/SC	0.802 (3.291)** [.001]	0.776 (3.454)** [.001]	DIV/SC	0.764 (3.143)** [.002]	0.755 (3.244)** [0.001]
R^2	**0.569**	**0.548**	**R^2**	**0.616**	**0.596**	**R^2**	**0.619**	**0.584**
Adjusted R^2	**0.528**	**0.531**	**Adjusted R^2**	**0.58**	**0.581**	**Adjusted R^2**	**0.583**	**0.565**
F statistic	**13.947** [.000]**	**32.491** [.000]**	**F statistic**	**16.974** [.000]**	**39.575** [.000]**	**F statistic**	**17.186** [.000]**	**31.078** [.000]**

[a] Multiple Regression, [b] Stepwise Regression,

*** indicates significance at 5% level, ** indicates significance at 1% level,**

(t-statistics), [p-value]

Cost of Borrowings: Cost of borrowings indicator is insignificant in all the regression runs except in Run 2, where it enters the model with a negative coefficient significant at 5% level of significance. This indicates that generally, FDI Companies borrow less if Cost of Borrowings increase.

The impact of indicators for **Debt-Service Capacity, NDTS, Age, Dividend Payout, Uniqueness and Net Exports/Sales** of a firm is found generally insignificant on TL/TA ratio.

5.4 Conclusions - Multiple Regressions

The summarized multiple regression results have been presented in Table 5.23. The main conclusions derived from the results of multiple regressions conducted of each Debt Ratio (dependent variable) on various Determinants of Capital Structure (independent variables) are as follows:

1. At firm level multiple regression analysis, the study rejects the null hypotheses that there is no significant impact of Size of a company, Profitability of a company, Collateral value of assets, Volatility of companies' earnings, Growth rate of a company, existence of NDTS, Age of a company, Liquidity, Net Exports, Cost of borrowings, Cost of equity and Uniqueness of a company on a company's Debt Ratios. The study accepts the alternative hypotheses that all the above mentioned Determinants have significant impact on Debt Ratios (Capital Structure) of FDI Companies in India.

2. At firm level multiple regression analysis, the study accepts the null hypothesis that there is no significant impact of **Debt Service Capacity** of a company on Debt Ratios.

3. At firm level multiple regression analysis, the study accepts the null hypothesis that there is no significant impact of **Dividend Payout** of a company and Debt Ratios.

4. **Size** as measured by Log of sales has significant positive impact on TC&E/TA Ratio- (Table 5.20 -Run 1, 8 and 9) and on TL/TA Ratio (Table 5.22-Run 4) indicating that as the Size of company in terms of sales increases, its requirement

for short term funds to meet the financing requirements of working capital also increase which are met through availing trade credits facilities. The positive impact on TL/TA ratio is due to the fact that a major proportion of Total Liabilities come from Short Term Debt Funds, especially Trade Credits & Equivalents and hence the positive impact even on TL/TA ratio. Size as measured by Log of TNA has significant positive impact on LTD/TA Ratio (Table 5.21- Run 2 and 3). Size as measured by Log of GTFA has significant positive impact on LTD/TA Ratio (Table 5.21- Run 4 and 6). This finding is consistent with the predictions of Trade-Off Theory which says that large firms with tangible assets tend to borrow more.

5. **Profitability** has emerged as the most significant Determinant of Capital Structure of FDI Companies in India and has significant negative impact on all the forms of debt measures -STD1/TA Ratio (Table 5.19, Run 2, 4, 5 and 6), TC&E/TA Ratio (Table 5.20- Run 1, 4, 5, 7, 8 and 9), LTD/TA Ratio (Table 5.21 - Run 1 ,2, 3, and 6) and on TL/TA Ratio (Table 5.22 - Run 1, 2 ,3, 4, 5 and 6). This indicates that there are sufficient internally generated cash reserves and Profitable FDI Companies in India do not prefer to borrow even from short term sources like trade credit. This result confirms the prediction of Pecking-Order Theory where highly profitable firms prefer to use internally generated funds out of surplus profit to finance their investments firms and hence resort to lower levels of debt in their Capital Structure.

6. Another important Determinant of Debt Ratios is **Collateral Effect**. Collaterals in the form of fixed assets as measured by NFA/TNA have significant negative impact on Short Term Debt Ratios- STD1/TA Ratio (Table 5.19, Run 1, 2, 3, 4, 5 and 6) and on TC&E/TA Ratio (Table 5.20, Run 1, 4, 6, 8 and 9). Similarly another indicator of Collateral GFA/TGA also significant negative impact on TC&E/TA Ratio (Table 5.20, Run 5, 7). At the same time, NFA/TNA has significant positive impact on Long Term Debt Ratio – LTD/TA (Table 5.21, Run 1, 3 and 5) and GFA/TGA has significant positive impact on LTD/TA (Table 5.21, Run 4 and 6). This indicates that that

higher the proportion of tangible fixed assets, lower will be the reliance on short term debt. It also indicates that companies having high collaterals in the form of fixed assets will tend to borrow more from long term sources.

7. One of the interesting findings is that, while Collateral effect as measured by FA/TA has significant negative impact on Short Term Debt Ratios, at the same time Collateral effect as measured by INV/TNA has significant positive impact on STD1/TA ratio (Table 5.19, Run 35 and 6), on TC&E/TA Ratio (Table 5.20, Run 3 and 9) and on TL/TA ratio (Table 5.22, Run 2, 3 and 6). The indicator (Nfa+Inv+AR)/TNA has significant positive impact on TC&E/TA Ratio (Table 5.20, Run 2) , LTD/TA ratio (Table 5.21, Run 2) and on TL/TA ratio (Table 5.22, Run 1and 5). This indicates that FDI Companies in India follow the **'Matching Principle'** as their financing policy. "According to this principle, the maturity of the sources of financing should match the maturity of the assets being financed. This means that fixed assets and permanent current assets should be supported by long term sources of finance whereas fluctuating current assets must be supported by short term sources of finance", Chandra Prasanna,(5^{th} Edition, page 597)[13].

8. **Volatility** has positive impact on all the Debt measures- STD1/TA Ratio (Table 5.19, Run 1, 2, 3, 4, 5 and 6), TC&E/TA Ratio (Table 5.20- Run 1, 2, 3,4,6 ,8 and 9). and 5), LTD/TA Ratio (Table 5.21 - Run 1 ,2, 3, and 6) and on TL/TA Ratio (Table 5.22 - Run 1, 2 ,3, 4, 5 and 6). These results indicate that FDI Companies in India are having sufficient internally generated reserves and hence do not face risk of bankruptcy. Therefore these companies do not hesitate to borrow debt funds even in case of volatile earnings.

9. **Growth rate** measured in terms of sales has positive impact on STD1/TA Ratio (Table 5.19, Run 6) and on TL/TA ratio (Table 5.22, Run 3) which indicates that growth in sales is supported by borrowing from short term debt sources. The positive impact of CAGR of Sales on TL/TA ratio is due to the fact that a major proportion of Total Liabilities is made up of Short Term Debt Funds and since Short Term Debt Funds support growth in sales, CAGR

of Sales has positive impact even on TL/TA ratio (Table 5.22, Run 3). Growth in assets as measured by CAGR of TNA has significant positive impact on TL/TA Ratio (Table 5.22, Run 6).

10. **NDTS** indicator Depr/TGA has significant negative impact only on Long term debt ratio- LTD/TA Ratio (Table 5.21, Run 6). The result confirms that depreciation act as tax shield and hence the negative relationship between NDTS and LTD/TA Ratio. Surprisingly the results of simple regression on LTD/TA ratio indicate positive impact of Depr/TGA on LTD/TA ratio. "This can be attributed to the omission of an important variable. On account of this omission, regression may give biased estimate.", Maddala G.S (2002)[14]. So in this study when we run simple regression, other important variables are omitted; therefore results of multiple regressions are much more reliable.

11. **Age of a firm** has significant positive impact on TC&E/TA ratio (Table 5.20, Run 2). And significant negative impact on LTD/TA Ratio (Table 5.21, Run 2, 4 and Run 6). Age factor is also negatively related to Growth rate (Table 5.24 - correlation matrix). The results indicate that mature well established firms might not have sufficient growth opportunities, hence might not need Long Term Debt funds. They may also have sufficient built in internal reserves and might not need to borrow Long Term funds. They may borrow Short Term Debt if required. The positive impact of Age on TC&E/TA ratio confirms this result and indicates that as the firm grows in Age, its ability to avail Short Term Trade Credit increases. These results support the Pecking Order Theory. But while interpreting the impact of Age factor on Debt Ratios, the sample data feature has to be kept in mind, since the sample data is for eighteen years (1991 to 2008) and the youngest company in the sample is of 19 years and the oldest company is of 107 years with a median age of 39.5 years.

12. **Liquidity** has significant negative impact on Short Term Debt Ratios- STD1/TA (Table 5.19, Run 1, 2, 3, 4, 5 and 6) and on TC&E/TA ratio (Table 5.20, Run 1, 2, 3, 4, 5, 6, 7, 8 and 9). Liquidity also has significant negative impact on Total Debt ratio- TL/TA ratio (Table 5.22, Run 1, 2, 3, 4, 5 and 6).

The results indicate that higher the proportion of liquid assets, the company may resort to low levels of Short Term Debt Funds. Liquidity has insignificant impact on Long Term Debt Ratios. Since Total Liabilities include a major portion as Short Term Debt Funds, it explains the negative impact of Liquidity on TL/TA Ratio.

13. **Net Exports** have significant negative impact on LTD/TA ratio (Table 5.21, Run 1, 3, 5 and 6). This must be due to the fact that net exporters can avail tax concessions and other benefits and hence do not need to resort to long term debt funds for financing purposes. Net exports have insignificant impact on other Debt Ratios.

14. **Cost of Equity** has significant positive impact on Short Term Debt Ratios- STD1/TA (Table 5.19, Run 4, 5 and 6) and TC&E/TA (Table 5.20, Run 7, 8 and 9). This indicates that as the Cost of Equity in the form of dividend payments increase, FDI Companies in India prefer Short Term Debt Funds for financing purposes. Cost of Equity has significant negative impact on LTD/TA ratio (Table 5.21, Run 5), indicating that even if Cost of Equity rises, FDI Companies do not prefer to borrow from Long Term Debt sources.

15. **Uniqueness** of a firm has significant negative impact on TC&E/TA ratio (Table 5.20, Run 2) and positive impact on LTD/TA ratio (Table 5.21, Run 2). The results indicate that unique firms tend to borrow more Long Term Debt than Short Term Debt. A unique firm which is incurring huge expenditures on research and development needs funds to finance these expenditures and these firms rely on Long Term Debt for their financing requirements.

16. **Cost of Borrowings** has significant positive impact on TC&E/TA ratio (Table 5.20, Run 1, 2, 3 4, 5, and 6) and has significant negative impact on LTD/TA Ratio (Table 5.21, Run 2 and 6), TL/TA Ratio (Table 5.22, Run 2). The results indicate that as cost of borrowings increase, preference for Trade Credits & Equivalents increase and preference for Long Term Debt reduces.

Table 5.23					
Summary of Results of Mutiple Regressions					
Dependent variables- Debt Ratios		STD1/TA	TC&E/TA	LTD/TA	TL/TA
Independent Variables	Indicators				
Size	Log of sales	N.S	+VE**	N.S	+VE**
	Log of TNA	N.S	N.S	+VE**	---
	Log of GTFA	---	N.S	+VE**	---
Profitability	PBT/TNA	–VE**	–VE*	–VE**	–VE**
	PBITDA/TGA	---	–VE**	–VE**	---
Collateral	NFA/TNA	–VE**	–VE**	+VE**	N.S
	GFA/TGA	---	–VE**	+VE**	---
	(Nfa+Inv+AR)/TNA	---	+VE**	+VE**	+VE**
	Inventories/TNA	+VE**	+VE**	---	+VE**
Volatility	COV of PBIT / TNA	+VE**	+VE*	+VE*	+VE**
	SD of PBITDA	---	N.S	N.S	---
Growth rate	CAGR of TNA	N.S	N.S	N.S	+VE*
	CAGR of sales	+VE**	N.S	N.S	+VE*
NDTS	Depr/TGA	---	N.S	–VE**	---
Debt Service capacity	PBDIT/INT	---	N.S	N.S	---
Age	Log of age of firm	N.S	+VE*	–VE**	N.S
Dividend payout	Equity Div/PAT	N.S	N.S	N.S	N.S
Liquidity	CA/CL	–VE**	–VE**	N.S	–VE**
Net Exports	Net exp/Sales	N.S	N.S	–VE*	N.S
Cost of Equity	DIV/SC	+VE**	+VE*	–VE**	+VE**
Uniqueness	R&D/Sales	N.S	–VE**	+VE*	N.S
Cost of Borrowing	Int/TD	N.S	+VE**	–VE *	–VE **
* indicates significance at 5% level, ** indicates significance at 1% level					
Not Significant=(NS), Positive= (+VE), Negative =(–VE)					
A Dash means -- the indicator is not included in final regression runs					

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Table 5.24 (page 1)

Pearsons Correlations Matrix of Explanatory Variables for Debt Ratios

Variables	Log of sales	Log of GTFA	Log of TNA	PBIT/TNA	PBITDA/TGA	PBT/TNA	PBIT/Sales	PBIT/CE	NFA/TNA	GFA/TGA	(Nfa+Inv+AR)/TNA	L&B/TGA	P&E/TGA	INV/TNA	SD of PBIT	SD of %Δ in PBIT	SD of PBITDA/TGA
Log of sales	1																
Log of GTFA	.876(**)	1															
Log of TNA	.945(**)	.937(**)	1														
PBIT/TNA	.294(**)	.169(*)	.239(**)	1													
PBITDA/TGA	.299(**)	.186(*)	.250(**)	.986(**)	1												
PBT/TNA	.281(**)	0.146	.230(**)	.972(**)	.967(**)	1											
PBIT/Sales	0.123	0.082	0.1	.341(**)	.310(**)	.326(**)	1										
PBIT/CE	.199(*)	0.05	0.144	.690(**)	.673(**)	.634(**)	.239(**)	1									
NFA/TNA	0.037	.438(**)	0.159	-0.14	-0.105	-.187(*)	0.041	-.239(**)	1								
GFA/TGA	-0.015	.395(**)	0.077	-0.153	-0.134	-.195(*)	0.062	-.245(**)	.951(**)	1							
(Nfa+Inv+AR)/TNA	0.048	0.104	-0.038	-.305(**)	-.307(**)	-.384(**)	0.161	-0.135	.336(**)	.367(**)	1						
L&B/TGA	-0.074	0.044	-0.006	0.008	-0.011	0.002	0.042	-0.035	.186(*)	.176(*)	-.171(*)	1					
P&E/TGA	-.188(*)	-0.118	-0.139	-0.045	-0.043	-0.02	0.032	-0.062	0.05	0.089	0.079	-0.039	1				
INV/TNA	0.128	-0.093	-0.023	0.016	-0.026	-0.04	0.101	.185(*)	-.422(**)	-.335(**)	.390(**)	-.222(**)	0.119	1			
SD of PBIT	.652(**)	.627(**)	.679(**)	.226(**)	.231(**)	.224(**)	0.044	0.162	0.102	0.047	-0.109	-0.095	-0.096	-0.048	1		
SD of %Δ in PBIT	-.239(**)	-0.153	-0.118	-.316(**)	-.302(**)	-.309(**)	-.698(**)	-.237(**)	-0.08	-0.116	-.407(**)	.280(**)	-0.04	-.218(**)	-0.074	1	
SD of PBITDA/TGA	-0.162	-.206(*)	-0.149	-0.065	-0.073	-0.103	-.555(**)	0.024	-0.126	-.180(*)	-.287(**)	0.07	-0.064	-0.064	0.012	.533(**)	1
COV of PBIT	0.076	0.076	0.075	-.206(*)	-.188(*)	-.189(*)	-0.054	-0.14	0.004	0.001	0.024	0.016	-0.02	0.029	-0.01	0.049	0.055
COV of PBIT/CE	-0.022	-0.059	-0.019	0.109	0.111	0.128	0.137	.206(*)	-0.081	-0.092	-0.057	0.037	0.026	-0.003	0.013	-0.082	-0.059
COV of PBIT/TNA	-0.093	-.178(*)	-0.108	-.254(**)	-.296(**)	-.273(**)	.426(**)	-0.109	-0.107	-0.097	0.085	0.006	0.004	0.118	-0.073	-0.156	0.137
CAGR of TNA	.324(**)	.357(**)	.418(**)	.324(**)	.383(**)	.354(**)	.269(**)	.199(*)	0.163	0.053	-0.087	-0.056	-0.068	-.303(**)	.297(**)	-.249(**)	-.282(**)
CAGR of sales	.313(**)	.310(**)	.320(**)	.278(**)	.334(**)	.296(**)	.423(**)	0.135	.238(**)	0.149	0.124	-0.076	-0.054	-.250(**)	.272(**)	-.460(**)	-.371(**)
Depr/TGA	0.025	.262(**)	0.031	0.081	0.138	0.094	0.085	-0.103	.506(**)	.644(**)	0.123	-0.036	0.07	-.268(**)	0.012	-0.153	-.234(**)
Depr+ET/TGA	0.098	0.145	0.129	.226(**)	.249(**)	.233(**)	0.077	0.06	0.137	0.116	0.013	0.054	-0.021	-.186(*)	0.136	-0.077	0.109
Depr/PBITDA	-0.032	0.041	-0.014	-0.116	-0.112	-0.139	0.016	-0.117	.174(*)	.179(*)	0.052	-0.019	-0.027	-0.14	-0.031	0.024	0.048
PBDIT/INT	0.117	0.061	0.111	.331(**)	.322(**)	.328(**)	0.046	0.165	-0.039	-0.06	-.183(*)	-0.002	0.088	-0.015	.236(**)	-0.039	.206(*)
Age in yrs	.345(**)	.195(*)	.272(**)	.189(*)	0.145	.202(*)	-0.026	0.118	-.282(**)	-.260(**)	-0.033	-0.098	-0.024	.326(**)	0.065	-0.074	-0.046
Log of age	.335(**)	.197(*)	.274(**)	.174(*)	0.121	.188(*)	-0.046	0.108	-.291(**)	-.260(**)	-0.035	-0.09	-0.016	.324(**)	0.066	-0.058	-0.024
Eq Div/PAT	.219(**)	0.157	.190(*)	.241(**)	.253(**)	.268(**)	-0.026	.173(*)	-0.061	-0.071	-0.148	0.048	-0.097	-0.038	0.058	0.007	0.015
CA/CL	-.302(**)	-.195(*)	-.242(**)	0.087	0.072	0.108	0.073	-0.056	0.022	0.059	-0.033	-0.053	0.037	-0.018	-.183(*)	-0.067	-0.078
Net exp/Sales	-0.125	0.027	-0.024	0.083	0.072	0.083	0.005	-0.062	.250(**)	.215(*)	-0.143	.297(**)	0.051	-.273(**)	-0.049	0.059	.205(*)
DIV/SC	.359(**)	.229(**)	.297(**)	.681(**)	.666(**)	.676(**)	0.089	.565(**)	-0.112	-0.148	-.248(**)	0.013	-0.087	0.069	.315(**)	-0.104	0.038
R&D/Sales	0.007	0.113	0.087	0.031	0.036	0.05	0.063	-0.014	.181(*)	0.159	-0.007	-0.072	.178(*)	-.170(*)	-0.022	-0.049	-0.084
INT/DEBT	-0.01	-0.147	-0.053	0.067	0.045	0.058	-0.073	0.109	-.352(**)	-.352(**)	-0.044	-0.052	-0.038	.321(**)	-0.137	0.086	0.106

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table No. 5.24 (page 2)

Pearsons Correlations Matrix of Explanatory Variables for Debt Ratios

Variables	COV of PBIT	COV of PBIT/CE	COV of PBIT/TNA	CAGR of TNA	CAGR of sales	Depr/TGA	Depr+ET/TGA	Depr/PBITDA	PBDIT/INT	Age in yrs	Log of age	Eq Div/PAT	CA/CL	Net exp/Sales	DIV/SC	R&D/Sales	INT/DEBT
Log of sales																	
Log of GTFA																	
Log of TNA																	
PBIT/TNA																	
PBITDA/TGA																	
PBT/TNA																	
PBIT/Sales																	
PBIT/CE																	
NFA/TNA																	
GFA/TGA																	
(Nfa+Inv+AR)/TNA																	
L&B/TGA																	
P&E/TGA																	
INV/TNA																	
SD of PBIT																	
SD of %Δ in PBIT																	
SD of PBITDA/TGA																	
COV of PBIT	1																
COV of PBIT/CE	0.072	1															
COV of PBIT/TNA	.404(**)	-0.013	1														
CAGR of TNA	-0.032	0.151	-0.142	1													
CAGR of sales	-0.035	0.117	-0.023	.837(**)	1												
Depr/TGA	0.003	-0.024	-0.154	0.151	.235(**)	1											
Depr+ET/TGA	-0.03	-0.076	-0.018	.323(**)	.316(**)	.175(*)	1										
Depr/PBITDA	-0.011	-.797(**)	.180(*)	-0.107	-0.042	0.091	0.084	1									
PBDIT/INT	-0.022	0.02	-0.047	0.129	0.046	-0.045	.192(*)	-0.035	1								
Age in yrs	0.023	-0.086	-0.089	-0.152	-.255(**)	-.249(**)	-0.091	-0.084	0.073	1							
Log of age	0.042	-0.099	-0.077	-.168(*)	-.302(**)	-.257(**)	-0.104	-0.072	0.098	.974(**)	1						
Eq Div/PAT	-0.109	0.058	-.182(*)	0.1	0.068	0.024	-0.003	-0.071	0.052	0.015	0.021	1					
CA/CL	-0.079	0.089	-0.098	0.055	-0.045	0.058	.282(**)	-0.079	0.001	-0.092	-0.076	-0.101	1				
Net exp/Sales	-0.008	-0.128	0.06	0.109	0.052	-0.013	.655(**)	0.129	0.125	0.007	0.011	-0.062	.307(**)	1			
DIV/SC	-0.092	0.049	-.180(*)	0.131	0.125	-0.028	0.046	-0.055	.170(*)	.191(*)	.179(*)	.388(**)	-0.136	-0.024	1		
R&D/Sales	0.022	0.038	-0.032	-0.025	-0.03	.171(*)	0.038	-0.002	0.056	0.072	0.092	0.086	0.004	0.114	-0.041	1	
INT/DEBT	-0.052	-0.01	-0.03	-.250(**)	-.285(**)	-.312(**)	-0.093	-0.034	0.005	.193(*)	.223(**)	0.006	-0.116	-0.105	0.081	0.02	1

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 5.25

Variance Inflationary Factor (Multiple Regressions on STD1/TA Ratio)

	Run 1^{b}	Run 2^{b}	Run 3^{b}	Run4^{b}	Run5^{b}	Run6^{b}
Log of sales	----	----	----	----	----	----
Log of GTFA	----	----	----	----	----	----
Log of TNA	----	----	----	----	----	----
PBITDA/TGA	----	----	----	----	----	----
PBT/TNA	----	1.148	----	2.138	2.552	2.224
NFA/TNA	1.012	1.067	1.222	1.068	1.419	1.319
GFA/TGA	----	----	----	----	----	----
(Nfa+Inv+AR)/TNA	----	----	----	----	----	----
INV/TNA	----	----	1.225		1.293	1.276
SD of PBITDA/TGA	----	----	----	----	----	----
COV of PBIT/TNA	1.021	1.116	1.028	1.116	1.136	1.119
CAGR of TNA	----	----	----	----	----	----
CAGR of sales	----	----	----		2.104	----
Depr/TGA	----	----	----	----	----	----
PBDIT/INT	----	----	----		----	----
Log of age	----	----	----	----	----	----
Eq Div/PAT	----	----	----		----	----
CA/CL	1.01	1.018	1.01	1.109	1.131	1.113
Net exp/Sales	----	----	----	----	----	----
DIV/SC	----	----	----	2.010	2.104	2.066
R&D/Sales	----	----	----	----	----	----
INT/DEBT	----	----	----	----	----	----

Table 5.26

Variance Inflationary Factor (Multiple Regressions on TC&E/TA Ratio)

	Run 1^{b}	Run 2^{b}	Run 3^{b}	Run4^{b}	Run5^{b}	Run6^{b}	Run7^{b}	Run8^{b}	Run9^{b}
Log of sales	1.255	----	----	----	----	----	----	1.286	1.340
Log of GTFA	----	----	----	----	----	----	----	----	----
Log of TNA	----	----	----	----	----	----	----	----	----
PBITDA/TGA	----	----	----	----	1.025	----	1.897	----	----
PBT/TNA	1.285	----	----	1.148	----	----	----	2.189	2.306
NFA/TNA	1.231	----	----	1.221		1.161	----	1.232	1.368
GFA/TGA	----	----	----	----	1.023	----	1.027	----	----
(Nfa+Inv+AR)/TNA	----	1.010	----	----	----	----	----	----	----
INV/TNA	----	----	1.137	----	----	----	----	----	1.333
SD of PBITDA/TGA	----	----	----	----	----	----	----	----	----
COV of PBIT/TNA	1.126	1.025	1.031	1.125	----	1.029	----	1.126	1.120
CAGR of TNA	----	----	----	----	----	----	----	----	----
CAGR of sales	----	----	----	----	----	----	----	----	----
Depr/TGA	----	----	----	----	----	----	----	----	----
PBDIT/INT	----	----	----	----	----	----	----	----	----
Log of age	----	1.071	----	----	----	----	----	----	----
Eq Div/PAT	----	----	----		----	----	----	----	----
CA/CL	1.184	1.029	1.026	1.033	1.010	1.026	1.073	1.242	1.243
Net exp/Sales	----	----	----	----	----	----	----	----	----
DIV/SC	----	----	----	----	----	----	1.924	2.062	2.096
R&D/Sales	----	1.009	----	----	----	----	----	----	----
INT/DEBT	1.168	1.066	1.139	1.166	----	1.165	----	1.170	----

Table 5.27

Variance Inflationary Factor (Multiple Regressions on LTD/TA Ratio)

	Run 1[b]	Run 2[b]	Run3[b]	Run4[b]	Run5[b]	Run6[b]
Log of sales	----	----	----	----	----	----
Log of GTFA	----	----	----	1.426	----	1.461
Log of TNA	----	1.146	1.118	----	----	----
PBITDA/TGA	----	----	----	1.094	----	1.260
PBT/TNA	1.056	1.265	1.145	----	----	----
NFA/TNA	1.118	----	1.182	----	1.104	
GFA/TGA	----	----	----	1.446	----	2.624
(Nfa+Inv+AR)/TNA	----	1.179	----	----	----	----
INV/TNA	----	----	----	----	----	----
SD of PBITDA/TGA	----	----	----	----	----	----
COV of PBIT/TNA	----	----	----	----	1.061	----
CAGR of TNA	----	----	----	----	----	----
CAGR of sales	----	----	----	----	----	----
Depr/TGA	----	----	----	----	----	2.075
PBDIT/INT	----	----	----	----	----	----
Log of age	----	1.175	----	1.211	----	1.269
Eq Div/PAT	----	----	----	----	----	----
CA/CL	----	----	----	----	----	----
Net exp/Sales	1.087	----	1.100	----	1.076	1.156
DIV/SC	----	----	----	----	1.053	----
R&D/Sales	----	1.013	----	----	----	----
INT/DEBT	----	1.071	----	----	----	1.191

Table 5.28

Variance Inflationary Factor (Multiple Regressions on TL/TA Ratio)

	Run 1[b]	Run 2[b]	Run3[b]	Run4[b]	Run5[b]	Run6[b]
Log of sales	----	----	----	1.268	----	----
Log of GTFA	----	----	----	----	----	----
Log of TNA	----	----	----	----	----	----
PBITDA/TGA	----	----	----	----	----	----
PBT/TNA	1.268	1.094	1.208	2.098	2.26	2.34
NFA/TNA	----	----	----	----	----	----
GFA/TGA	----	----	----	----	----	----
(Nfa+Inv+AR)/TNA	1.174	----	----	----	1.175	----
INV/TNA	----	1.138	1.088	1.088	----	1.128
SD of PBITDA/TGA	----	----	----	----	----	----
COV of PBIT/TNA	1.086	1.104	1.108	----	1.087	1.101
CAGR of TNA	----	----	----	----	----	1.284
CAGR of sales	----	----	1.187	----	----	----
Depr/TGA	----	----	----	----	----	----
PBDIT/INT	----	----	----	----	----	----
Log of age	----	----	----	----	----	----
Eq Div/PAT	----	----	----	----	----	----
CA/CL	1.017	1.035	1.024	1.219	1.108	1.109
Net exp/Sales	----	----	----	----	----	----
DIV/SC	----	----	----	2.058	2.009	2.078
R&D/Sales	----	----	----	----	----	----
INT/DEBT	----	1.144	----	----	----	----

Table 5.29

Regression runs on Debt ratio:STD1/TA

Run1	Run2	Run3	Run4	Run5	Run6	Run7	Run8	Run9	Run10	Run11
Log of sales	Log of sales	Log of sales	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA	Log of TNA	Log of TNA	Log of TNA
PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA
NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of sales	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)
INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT(+)
R sq= .522	R sq =0.349	R sq =0.429	**R sq= .522**	R sq =0.329	R sq =0.429	**R sq= .522**	R sq =0.349	R sq =0.429	**R sq= .522**	R sq =0.329
Adj R sq= .508	Adj R sq=.325	Adj R sq=.416	**Adj R2= .508**	Adj R sq=.309	Adj R sq=.416	**Adj R2= .508**	Adj R sq=.325	Adj R sq=.416	**Adj R2= .508**	Adj R sq=.309

Run12	Run13	Run14	Run15	Run16	Run17	Run18	Run19	Run20	Run21	Run22
Log of TNA	Log of GTFA	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA	Log of TNA	Log of sales	Log of sales	Log of sales
PBT/TNA	PBITDA/TGA(-)	------	------	------	------	------	------	------	------	------
INV/TNA(+)	GFA/TGA(-)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)
COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT
------	PBDIT/INT	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC
R sq =0.429	R sq =.411	R sq =.490	R sq =.349	R sq =0.429	R sq =.490	R sq =.349	R sq =0.429	R sq =.490	R sq =0.329	R sq =0.429
Adj R sq=.416	Adj R sq=.398	Adj R sq=.478	Adj R sq=.325	Adj R sq=.416	Adj R sq=.478	Adj R sq=.325	Adj R sq=.416	Adj R sq=.478	Adj R sq=.309	Adj R sq=.416

Run23	Run24	Run25	Run26	Run27	Run28	Run29	Run30	Run31	Run32	Run33
Log of TNA	Log of sales	Log of TNA	Log of GTFA	Log of sales	Log of sales	Log of sales	Log of TNA	Log of sales	Log of sales	Log of TNA
------	------	------	PBITDA/TGA(-)	PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA	------	PBT/TNA(-)	PBT/TNA(-)
NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	GFA/TGA(-)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA	INV/TNA(+)	INV/TNA(+)	NFA/TNA(+)	NFA/TNA(-)	NFA/TNA(-)
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of sales	CAGR of sales	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales(+)	CAGR of sales(+)
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
DIV/SC	DIV/SC	DIV/SC	DIV/SC(+)	DIV/SC(+)	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC(+)	DIV/SC(+)
R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	Depr/TGA	------	------	------	------	INV/TNA(+)	INV/TNA(+)	INV/TNA(+)
------	------	------	PBDIT/INT	------	------	------	------	------	------	------
R sq =.490	R sq =0.329	R sq =0.429	R sq =0.431	**R sq= .561**	R sq= .349	R sq =0.429	R sq =0.430	**R sq =.544**	**R sq =.609**	**R sq =.609**
Adj R sq=.478	Adj R sq=.309	Adj R sq=.416	Adj R sq=.414	**Adj R2= .544**	Adj R2= .325	Adj R sq=.416	Adj R sq=.417	**Adj R sq=.530**	**Adj R sq=.589**	**Adj R sq=.589**

Table 5.30

Regression runs on Debt ratio:TC&E/TA

Run1	Run2	Run3	Run4	Run5	Run6	Run7	Run8	Run9	Run10	Run11
Log of sales(+)	Log of sales	Log of sales	Log of sales(+)	Log of sales	Log of sales	Log of TNA	Log of TNA	Log of TNA	Log of TNA	Log of TNA
PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA
NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales
Log of age	Log of age (+)	Log of age	Log of age	Log of age (+)	Log of age	Log of age	Log of age (+)	Log of age	Log of age	Log of age (+)
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)
INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)
R sq= .650	**R sq =0.516**	**R sq =0.548**	**R sq= .650**	**R sq =0.516**	**R sq =0.548**	**R sq= .623**	**R sq =0.516**	**R sq =0.548**	**R sq= .623**	**R sq =0.516**
Adj R sq= .634	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R2= .634**	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R2= .609**	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R2= .609**	**Adj R sq=.494**

Run12	Run13	Run14	Run15	Run16	Run17	Run18	Run19	Run20	Run21	Run22
Log of TNA	Log of GTFA	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA	Log of TNA	Log of sales	Log of sales	Log of sales
PBT/TNA	PBITDA/TGA(-)	------	------	------	------	------	------	------	------	------
INV/TNA(+)	GFA/TGA(-)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)
COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales
Log of age	Log of age	Log of age	Log of age (+)	Log of age	Log of age	Log of age (+)	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales
INT/DEBT(+)	INT/DEBT	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT
------	PBDIT/INT	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC
R sq =0.548	**R sq =.533**	**R sq =.596**	**R sq =0.516**	**R sq =0.548**	**R sq =.596**	**R sq =0.516**	**R sq =0.548**	**R sq =.596**	**R sq =0.516**	**R sq =0.548**
Adj R sq=.535	**Adj R sq=.522**	**Adj R sq=.584**	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R sq=.584**	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R sq=.584**	**Adj R sq=.494**	**Adj R sq=.535**

Run23	Run24	Run25	Run26	Run27	Run28	Run29	Run30	Run31	Run32	Run33
Log of TNA	Log of sales	Log of TNA	Log of GTFA	Log of sales(+)	Log of sales	Log of sales	Log of TNA	Log of sales	Log of sales(+)	Log of TNA
------	------	------	PBITDA/TGA(-)	PBT/TNA(-)	PBT/TNA	PBT/TNA	PBT/TNA	------	PBT/TNA(-)	PBT/TNA(-)
NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	GFA/TGA(-)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	INV/TNA(+)	NFA/TNA(+)	NFA/TNA(-)	NFA/TNA(-)
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of sales	CAGR of sales	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales
Log of age	Log of age (+)	Log of age	Log of age	Log of age	Log of age (+)	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
DIV/SC	DIV/SC	DIV/SC	DIV/SC(+)	DIV/SC(+)	DIV/SC	DIV/SC	DIV/SC	DIV/SC	DIV/SC(+)	DIV/SC(+)
R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT(+)	INT/DEBT(+)	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	Depr/TGA	------	------	------	------	INV/TNA(+)	INV/TNA(+)	INV/TNA(+)
------	------	------	PBDIT/INT	------	------	------	------	------	------	------
R sq =.596	**R sq =0.516**	**R sq =0.548**	**R sq =0.549**	**R sq= .665**	**R sq =0.516**	**R sq =0.548**	**R sq =0.549**	**R sq =.544**	**R sq =.673**	**R sq =.661**
Adj R sq=.584	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R sq=.536**	**Adj R2= .647**	**Adj R sq=.494**	**Adj R sq=.535**	**Adj R sq=.536**	**Adj R sq=.530**	**Adj R sq=.655**	**Adj R sq=.646**

Table 5.31

Regression runs on Debt ratio:LTD/TA

Run1	Run2	Run3	Run4	Run5	Run6	Run7	Run8	Run9	Run10	Run11
Log of sales	Log of sales	Log of sales	Log of sales	Log of sales(+)	Log of sales(+)	Log of TNA	Log of TNA(+)	Log of TNA(+)	Log of TNA(+)	Log of TNA(+)
PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)
NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA
CAGR of TNA	CAGR of TNA(+)	CAGR of TNA(+)	CAGR of sales	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age (-)	Log of age (-)	Log of age	Log of age (-)	Log of age (-)	Log of age	Log of age (-)
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Net exp/Sales(-)	Net exp/Sales
R&D/Sales	R&D/Sales(+)	R&D/Sales(+)	R&D/Sales	R&D/Sales(+)	R&D/Sales(+)	R&D/Sales	R&D/Sales(+)	R&D/Sales(+)	R&D/Sales	R&D/Sales(+)
INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	INT/DEBT	INT/DEBT(-)
R sq= .64	R sq =0.435	R sq =0.396	**R sq =0.64**	R sq =0.46	R sq =0.431	**R sq =0.64**	**R sq =0.51**	R sq =0.470	**R sq =0.659**	**R sq =0.51**
Adj R sq= .63	Adj R sq=.414	Adj R sq=.378	**Adj R sq= .63**	Adj R sq=.439	Adj R sq=.410	**Adj R sq= .63**	**Adj R sq=.488**	Adj R sq=.450	**Adj R sq=.64**	**Adj R sq=.488**
Run12	**Run13**	**Run14**	**Run15**	**Run16**	**Run17**	**Run18**	**Run19**	**Run20**	**Run21**	**Run22**
Log of TNA(+)	Log of GTFA(+)	Log of sales	Log of sales	Log of sales(+)	Log of TNA	Log of TNA(+)	Log of TNA(+)	Log of sales	Log of sales	Log of sales(+)
PBT/TNA(-)	PBITDA/TGA(-)	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA
INV/TNA	GFA/TGA(+)	COV PBIT/TNA(+)	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA(+)	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA(+)	COV PBIT/TNA	COV PBIT/TNA
COV PBIT/TNA	SD of PBITDA/TGA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA(-)	CAGR of sales	CAGR of sales	CAGR of sales
CAGR of sales	CAGR of sales	Log of age	Log of age (-)	Log of age (-)	Log of age	Log of age (-)	Log of age (-)	Log of age	Log of age (-)	Log of age (-)
Log of age (-)	PBDIT/INT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
Eq Div/PAT	Log of age (-)	CA/CL	CA/CL(-)	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
CA/CL	Eq Div/PAT	Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Net exp/Sales(-)	Net exp/Sales	Net exp/Sales
Net exp/Sales	CA/CL	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	DIV/SC(-)
R&D/Sales(+)	Net exp/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT(-)	R&D/Sales	INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	INT/DEBT	INT/DEBT(-)	INT/DEBT(-)
	INT/DEBT									
R sq =0.470	**R sq =.53**	**R sq =.568**	R sq =.34	R sq =.237	**R sq =.568**	R sq =.403	R sq =.311	**R sq =.568**	R sq =.332	R sq =.237
Adj R sq=.45	**Adj R sq=.51**	**Adj R sq=.555**	Adj R sq=.308	Adj R sq=.214	**Adj R sq=.555**	Adj R sq=.376	Adj R sq=.286	**Adj R sq=.555**	Adj R sq=.308	Adj R sq=.214
Run23	**Run24**	**Run25**	**Run26**	**Run27**	**Run28**	**Run29**	**Run30**			
Log of TNA	Log of sales	Log of TNA(+)	Log of GTFA(+)	Log of sales	Log of sales	Log of sales	Log of TNA(+)			
NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	PBITDA/TGA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)			
COV PBIT/TNA(+)	COV PBIT/TNA	COV PBIT/TNA	GFA/TGA(+)	NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	INV/TNA	INV/TNA			
CAGR of sales	CAGR of sales	CAGR of sales(-)	SD of PBITDA/TGA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA			
Log of age	Log of age (-)	Log of age (-)	CAGR of sales	CAGR of TNA	CAGR of TNA(+)	CAGR of TNA(+)	CAGR of TNA			
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Depr/TGA(-)	Log of age	Log of age	Log of age	Log of age (-)			
CA/CL	CA/CL(-)	CA/CL	PBDIT/INT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT			
Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Log of age (-)	CA/CL	CA/CL	CA/CL	CA/CL			
DIV/SC(-)	DIV/SC(-)	DIV/SC(-)	Eq Div/PAT	Net exp/Sales(-)	Net exp/Sales	Net exp/Sales	Net exp/Sales			
R&D/Sales	R&D/Sales	R&D/Sales	CA/CL	DIV/SC	DIV/SC	DIV/SC	DIV/SC			
INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	Net exp/Sales(-)	R&D/Sales	R&D/Sales(+)	R&D/Sales(+)	R&D/Sales(+)			
			DIV/SC	INT/DEBT	INT/DEBT(-)	INT/DEBT(-)	INT/DEBT(-)			
			R&D/Sales							
			INT/DEBT(-)							
R sq =.568	R sq =.332	R sq =.308	**R sq =0.60**	**R sq= .64**	R sq= .435	R sq =.396	R sq =.47			
Adj R sq=.555	Adj R sq=.308	Adj R sq=.282	**Adj R sq=.579**	**Adj R2= .63**	Adj R2= .414	Adj R sq=.378	Adj R sq=.45			

Table 5.32

Regression runs on Debt ratio:TL/TA

Run1	Run2	Run3	Run4	Run5	Run6	Run7	Run8	Run9	Run10	Run11
Log of sales(+)	Log of sales	Log of sales	Log of sales(+)	Log of sales	Log of sales	Log of TNA	Log of TNA	Log of TNA	Log of TNA	Log of TNA
PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)
NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA	(Nfa+Inv+AR)/TNA(+)
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales(+)	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of sales	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT(-)	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT(-)	INT/DEBT	INT/DEBT
R sq= .518	**R sq =0.560**	**R sq =0.556**	**R sq= .518**	**R sq =0.560**	**R sq =0.562**	R sq= .495	**R sq =0.560**	**R sq =0.556**	R sq= .495	**R sq =0.560**
Adj R sq= .504	**Adj R sq=.547**	**Adj R sq=.539**	**Adj R2= .504**	**Adj R sq=.547**	**Adj R sq=.546**	Adj R2= .483	**Adj R sq=.547**	**Adj R sq=.539**	Adj R2= .483	**Adj R sq=.547**

Run12	Run13	Run14	Run15	Run16	Run17	Run18	Run19	Run20	Run21	Run22
Log of TNA	Log of GTFA	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA	Log of TNA	Log of sales	Log of sales	Log of sales
PBT/TNA(-)	PBITDA/TGA(-)	------	------	------	------	------	------	------	------	------
Inv/TNA(+)	GFA/TGA	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	NFA/TNA(-)	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)
COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of sales(+)	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA(-)	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age (-)	Log of age	Log of age	Log of age (-)	Log of age	Log of age	Log of age (-)
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	PBDIT/INT	DIV/SC(-)	DIV/SC	DIV/SC(-)	DIV/SC(-)	DIV/SC	DIV/SC(-)	DIV/SC(-)	DIV/SC	DIV/SC(-)
R sq =0.562	R sq =.345	R sq =.319	R sq =.456	R sq =0.406	R sq =.319	R sq =.456	R sq =0.406	R sq =.319	R sq =.456	R sq =0.406
Adj R sq=.546	Adj R sq=.336	Adj R sq=.304	Adj R sq=.444	Adj R sq=.384	Adj R sq=.304	Adj R sq=.444	Adj R sq=.384	Adj R sq=.304	Adj R sq=.444	Adj R sq=.384

Run23	Run24	Run25	Run26	Run27	Run28	Run29	Run30
Log of TNA	Log of sales	Log of TNA	Log of GTFA	Log of sales(+)	Log of sales	Log of sales	Log of TNA
------	------	------	PBITDA/TGA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)
NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	GFA/TGA	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	INV/TNA(+)
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of sales	CAGR of sales	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA(+)	CAGR of TNA(+)
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
DIV/SC(-)	DIV/SC	DIV/SC(-)	DIV/SC	DIV/SC(+)	DIV/SC(+)	DIV/SC(+)	DIV/SC(+)
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	Depr/TGA	------	------	------	------
------	------	------	PBDIT/INT	------	------	------	------
R sq =.319	R sq =.456	R sq =0.406	R sq =0.345	**R sq= .548**	**R sq= .596**	**R sq =0.584**	**R sq =0.584**
Adj R sq=.304	Adj R sq=.444	Adj R sq=.384	Adj R sq=.336	**Adj R2= .531**	**Adj R2= .581**	**Adj R sq=.565**	**Adj R sq=.565**

CHAPTER-6

DETERMINANTS OF CAPITAL STRUCTURE AT INDUSTRY LEVEL: AN EMPIRICAL ANALYSIS

CHAPTER CONTENTS

CHAPTER-6

DETERMINANTS OF CAPITAL STRUCTURE AT INDUSTRY LEVEL: AN EMPIRICAL ANALYSIS

In this chapter, empirical examination based on industry-wise classification of FDI Companies in India is carried out. An attempt is made to identify industry-wise Determinants of Capital Structure of FDI Companies in India and to examine the differences, if any, in the Capital Structure Determinants of FDI Companies belonging to three major industry groups - Machinery industry, Chemicals industry and Transport industry. Same technique of analysis as applied for company level analysis (Chapter-5) has been applied to examine change if any in the potential Determinants of Capital Structure for FDI Companies within each industry group. This analysis is also done company-wise but within each industry group.

6. 1 Results of Industry-Wise Multiple Regression Runs on Debt Ratios

Out of the final sample set of 140 FDI companies representing 11 industries, three major industry groups having at least 15 member companies are selected for industry-wise analysis. This is necessary for having at least ten data points for conducting multiple regression analysis. This condition is satisfied for three industries as mentioned below:

Sr. No	Industry Classification:	No. of Companies
1	Chemicals	37
2	Machinery	38
3	Transport	18

In Chapter-5, for conducting multiple regressions, four measures of Capital Structure are selected, which includes two Short Term Debt measures, one Long Term Debt measure and one Total Debt Measure. The same measures are selected for carrying out multiple regressions in industry-wise analysis. This will help to examine differences if any in the potential Determinants of Capital Structure of companies belonging to different industry groups.

In Chapter-5, the multiple regression runs reported on each debt measure are: 6 regression runs on STD1/TA ratio, 9 regression runs on TC&E/TA ratio, 6 regression runs on LTD/TA ratio and 6 regression runs on TL/TA ratio. Each of these runs is also conducted in each industry and the best multiple regression runs in each industry are reported for further industry-wise comparison on Capital Structure Determinants. The selected list of indicators representing various determinants also remains the same. Industry-wise correlation matrix is prepared to rule out multicollinearity problem. Since all the regression runs are not reported, a summary of results of all the regression runs conducted on each industry is prepared.

Industry-wise correlation matrix, Variance inflationary factors for each reported multiple regression run of each industry and the summary of results of all the regression runs conducted on each selected measure of debt of each industry are presented at the end of the chapter.

6. 2 Results of Multiple Regressions Runs: Chemical Industry

Table 6.1 presents the results of multiple regression runs of Chemical industry. Only significant regressions are reported in Table 6.1. The summary results of all the regression runs conducted on all the four debt ratios of Chemical industry are presented at the end of the chapter. Table 6.1.4 presents summary results of all the regression runs of Debt Ratio: STD1/TA. Table 6.1.5 presents summary results of all the regression runs of Debt Ratio: TC&E/TA ratio. Table 6.1.6 presents summary results of all the regression runs of Debt Ratio: LTD/TA. Table 6.1.7 presents summary results of all the regression runs of TL/TA ratio. Correlation matrix of explanatory variables of Debt Ratios from Chemical industry is presented at the end of the chapter in Table 6.1.2. Variance inflationary factors for each reported multiple regression run of Chemical industry are presented at the end of the chapter in Table 6.1.3.

6.2.1 Results of Multiple Regressions of STD1/TA Ratio for Chemical Industry:

The value of R^2 in reported regression Run2^b in Column-1 is 0.587 indicating that 58.7% variations in STD1/TA ratio are explained by significant indicators selected in Run2^b. The two significant predictors of STD1/TA ratio in Chemical industry are

Collateral and **Liquidity.** In Run 2: Column-1, Table 6.1, it is found out that **Collateral** indicator NFA / TNA has significant negative impact on STD1/TA ratio, the 't' statistic being significant at 1% level of significance. This result affirms the overall regression results of 140 sample FDI Companies and proves that Collaterals in the form of fixed assets are not used to obtain short term finance. **Liquidity** as measured by CA/CL ratio has significant negative impact on STD1/TA ratio, the 't' statistic being significant at 1% level of significance, indicating that greater liquid assets mean that companies finance their short term working capital requirements through these liquid assets and hence do not borrow short term funds. Out of other predictors, Profitability predictor PBT/TNA in $Run2^a$: Column-1, is significant and has negative impact on STD1/TA ratio, but is not a significant predictor in $Run2^b$: Column-1 (Step-wise regression). Even DIV/SC an indicator for Cost of Equity is significant and has positive impact on STD1/TA ratio in $Run2^a$: Column-1, but does not enter the model in stepwise regression in $Run2^b$: Column-1. The impact of indicators for **Size, Volatility, Growth rate, Age, Dividend Payout, Net Exports / Sales, Uniqueness, Cost of Borrowing and Cost of Equity** are found insignificant on STD1/TA ratio of companies in Chemical industry.

6.2.2 Results of Multiple Regressions of TC&E/TA Ratio for Chemical Industry:

Regression Run1: Column-2, Run 2: Column 3 and Run 5: Column-4 conducted on TC&E/TA in Table 6.1 reveal that the significant determinants of TC&E/TA ratio for Chemical industry are **Size, Collateral, Volatility, Liquidity, Age, and Dividend Payout.** The value of R^2 is highest in Run 1^b: Column-2, and indicates that a maximum of 70.6% variations in TC&E/TA ratio are explained by significant indicators selected in Regression Run 1^b: Column-2.

Size indicator 'Log of sales' has significant positive impact on TC&E/TA ratio, the 't' statistic being significant at 1% level of significance indicating that in Chemical industry large size firms in terms of greater sales mean greater reliance on trade credits. Increase in sales means increased manufacturing activity which increases the need of short term working capital requirements and leads to greater reliance on trade credits.

Collateral indicator GFA/TGA has significant negative impact on TC&E/TA ratio confirming that fixed assets act as Collaterals to obtain Long Term Debtwhich explains the negative impact of existence of fixed assets on trade credits.

Volatility indicator COV of PBIT/TNA has significant positive impact on TC&E/TA ratio of Chemical industry, the 't' statistic significant at 1% level of significance, which again confirms the overall regression results of 140 sample FDI Companies and indicates that FDI Companies in Chemical industry with volatile incomes prefer Short Term Trade Credit as a source of finance.

Liquidity as measured by CA/CL ratio has significant negative impact on TC&E/TA ratio, indicating that greater liquid assets mean lower reliance on Trade Credits.

Cost of Borrowing indicator INT / DEBT has significant positive impact on TC&E/TA ratio, the 't' statistic being significant at 5% level of significance indicating that as the Cost of Borrowing increases, FDI Companies in Chemical industry resort to greater levels of Short Term Trade Credit.

Age factor has significant positive impact on TC&E/TA ratio again confirming ability of mature firms in Chemical industry to avail Trade Credit easily.

Dividend Payout indicator - Equity Div/PAT has significant positive impact on TC&E/TA ratio of Chemical industry and the 't' statistic is significant at 5% level of significance. This indicates that in Chemical industry as the Dividend Payout increases, the companies meet their financing requirements by resorting to Short Term Trade Credit. This is an important finding, unique only to Chemical industry as the determinant – Dividend Payout was not significant in overall regression results of 140 sample FDI Companies.

The impact of indicators for **Growth rate, Net Exports/Sales, Uniqueness, and Cost of Equity** is found insignificant on TC&E/TA ratio of companies in Chemical industry.

Table 6.1 Results of Multiple Regression of Chemical Industry: 37 Companies					
Column 1			**Column 2**		
Dependent variable: STD1/TA Ratio			**Dependent Variable :TC&E/TA Ratio**		
	Run 2[a]	**Run 2[b]**		**Run 1[a]**	**Run 1[b]**
Intercept	0.442	0.571	Intercept	-0.087	0.071
Log of sales	0.015 (1.228) [0.231]	Excluded	Log of sales	0.022 (2.215)* [0.036]	0.030 (3.997)** [.000]
PBT/TNA	-0.822 (-2.944)** [0.007]	Excluded	PBT/TNA	-0.141 (-0.863) [0.396]	Excluded
NFA/TNA	-0.36 (-2.746)* [0.011]	-0.344 (-4.088)** [.000]	NFA/TNA	-0.064 (-0.582) [0.566]	-0.021 (-1.779) [0.085]
COV of PBIT to TNA	0.014 (0.231) [0.819]	Excluded	COV of PBIT to TNA	0.117 (2.209)* [0.037]	0.126 (3.231)** [0.003]
CAGR of TNA	0.051 (0.261) [0.796]	Excluded	CAGR of TNA	0.062 (0.375) [0.711]	Excluded
Log of age of firm	0.019 (0.454) [0.654]	Excluded	Log of age of firm	0.044 (1.258) [0.22]	Excluded
Equity Div/PAT	0.020 (0.501) [0.621]	Excluded	Equity Div/PAT	0.054 (1.637) [0.114]	Excluded
CA/CL	-0.022 (-3.245)** [0.003]	-0.026 (-5.211)** [.000]	CA/CL	-0.018 (-3.530)** [0.002]	-0.021 (-5.046)** [.000]
Net exp/Sales	0.061 (1.002) [0.326]	Excluded	Net exp/Sales	-0.046 (-0.897) [0.378]	Excluded
R&D/Sales	0.823 (0.559) [0.581]	Excluded	R&D/Sales	-0.700 (-0.584) [0.565]	Excluded
INT/DEBT	0.070 (0.415) [0.682]	Excluded	INT/DEBT	0.324 (2.245)* [0.034]	0.320 (2.367)* [0.024]
DIV/SC	0.575 (2.323)* [0.029]	Excluded	DIV/SC	---	---
PBDIT/INT	---	---	PBDIT/INT	---	---
R^2	**0.784**	**0.610**	**R^2**	**0.793**	**0.747**
Adjusted R^2	**0.676**	**0.587**	**Adjusted R^2**	**0.701**	**0.706**
F statistic	**7.265**** **[.000]**	**26.631**** **[.000]**	**F statistic**	**8.691**** **[.000]**	**18.308**** **[.000]**

[a] Multiple Regression , [b] Stepwise Regression,
*** indicates significance at 5% level, ** indicates significance at 1% level ,**
(t-statistics) , [p-value]

Table 6.1 Continued Results of Multiple Regression of Chemical Industry: 37 Companies Dependent variable: TC&E / TA Ratio					
Column 3			**Column 4**		
	Run2[a]	**Run 2[b]**		**Run5[a]**	**Run5[b]**
Intercept	-0.37	-0.048	Intercept	-0.025	0.429
Log of sales	0.023 (2.370)* [0.026]	Excluded	Log of GTFA	0.017 (1.814) [0.082]	Excluded
PBT / TNA	0.051 (0.249) [0.805]	Excluded	PBITDA / TGA	-0.525 (-2.902)** [0.008]	Excluded
(Nfa+Inv+AR) / TNA	0.180 (1.160) [0.257]	Excluded	GFA / TGA	-0.155 (-1.396) [0.175]	-0.275 (-3.766)** [0.001]
COV of PBIT to TNA	0.151 (2.840)** [0.009]	Excluded	SD of PBITDA / TGA	1.120 (2.481)* [0.021]	Excluded
CAGR of TNA	0.110 (0.659) [0.516]	Excluded	CAGR of sales	0.300 (1.573) [0.129]	Excluded
Log of age of firm	0.056 (1.934) [0.065]	0.088 (3.399)** [0.002]	Log of age	0.061 (1.763) [0.091]	Excluded
Equity Div / PAT	0.072 (2.501)* [0.019]	0.062 (2.131)* [0.041]	Eq Div / PAT	0.049 (1.648) [0.112]	Excluded
CA / CL	-0.017 (-3.216)** [0.004]	-0.024 (-5.458)** [.000]	CA / CL	-0.019 (-3.860)** [0.001]	-0.024 (-5.325)** [.000]
Net exp / Sales	-0.059 (-1.223) [0.233]	Excluded	Net exp / Sales	-0.052 (-1.044) [0.307]	Excluded
R&D / Sales	-0.265 (-0.235) [0.816]	Excluded	R&D / Sales	-1.402 (-1.166) [0.255]	Excluded
INT / DEBT	0.350 (2.702)* [0.012]	Excluded	INT / DEBT	0.296 (2.102)* [0.046]	Excluded
DIV / SC	---	---	DIV / SC	---	---
PBDIT / INT	---	---	PBDIT / INT	3.46E-06 (0.201) [0.842]	Excluded
R^2	**0.801**	**0.623**	**R^2**	**0.811**	**0.596**
Adjusted R^2	**0.713**	**0.589**	**Adjusted R^2**	**0.717**	**0.572**
F statistic	**9.126** [.000]**	**18.184** [.000]**	**F statistic**	**8.598** [.000]**	**25.073** [.000]**

[a] Multiple Regression , [b] Stepwise Regression,
*** indicates significance at 5% level, ** indicates significance at 1% level ,**
(t-statistics) , [p-value]

Table 6.1 continued								
Results of Multiple Regression of Chemical Industry: 37 Companies								
Dependent variable: LTD / TA Ratio								
Column 5			Column 6			Column 7		
	Run 1[a]	Run 1[b]		Run2[a]	Run 2[b]		Run4[a]	Run4[b]
Intercept	0.444	0.044	Intercept	0.548	0.747	Intercept	0.494	0.004
Log of sales	-0.012 (-1.070) [0.295]	Excluded	Log of TNA	-0.001 (-0.062) [0.951]	Excluded	Log of GTFA	-0.009 (-0.759) [0.455]	Excluded
PBT / TNA	-0.326 (-1.785) [0.086]	-0.504 (-3.229)** [0.003]	PBT / TNA	-0.295 (-1.172) [0.252]	-0.449 (-2.911)** [.0070]	PBITDA / TGA	-0.346 (-1.470) [0.155]	-0.496 (-2.119)* [0.042]
NFA / TNA	0.270 (2.187)* [0.038]	0.518 (5.719)** [.000]	(Nfa+Inv+AR) / TNA	0.205 (1.053) [0.303]	Excluded	GFA / TGA	0.238 (1.653) [0.111]	0.500 (4.992)** [.000]
COV of PBIT to TNA	0.005 (0.080) [0.937]	Excluded	COV of PBIT to TNA	-0.006 (-0.099) [0.922]	Excluded	SD of PBITDA / TGA	0.141 (0.240) [0.812]	Excluded
CAGR of TNA	0.204 (1.101) [0.281]	Excluded	CAGR of TNA	0.231 (1.102) [0.281]	Excluded	CAGR of sales	0.211 (0.852) [0.403]	Excluded
Log of age of firm	-0.046 (-1.171) [0.253]	Excluded	Log of age of firm	-0.103 (-3.094)** [0.005]	-0.109 (-4.008)** [.000]	Log of age	-0.067 (-1.502) [0.146]	Excluded
Equity Div / PAT	-0.044 (-1.186) [0.247]	Excluded	Equity Div / PAT	-0.078 (-2.242)* [0.034]	-0.078 (-2.469)* [0.019]	Eq Div / PAT	-0.064 (-1.663) [0.109]	Excluded
CA / CL	-0.008 (-1.447) [0.160]	Excluded	CA / CL	-0.007 (-1.034) [0.311]	Excluded	CA / CL	-0.007 (-1.005) [0.325]	Excluded
Net exp / Sales	-0.123 (-2.138)* [0.042]	-0.138 (-3.166)** [0.003]	Net exp / Sales	-0.081 (-1.390) [0.177]	-0.130 (-3.088)** [0.004]	Net exp / Sales	-0.128 (-1.983) [0.059]	-0.143 (-2.823)** [0.008]
R&D / Sales	-3.194 (-2.381)* [0.025]	Excluded	R&D / Sales	-3.807 (-2.758)* [0.011]	-3.387 (-2.694)* [0.011]	R&D / Sales	-3.172 (-2.032) [0.053]	Excluded
INT / DEBT	-0.491 (-3.040)** [0.005]	Excluded	INT / DEBT	-0.621 (-3.919)** [0.001]	-0.571 (-3.880)** [0.001]	INT / DEBT	-0.502 (-2.741)* [0.011]	Excluded
DIV / SC	---	---	DIV / SC	---	---	DIV / SC	---	---
PBDIT / INT	---	---	PBDIT / INT	---	---	PBDIT / INT	-1.33E-06 (-0.060) [0.953]	Excluded
R^2	**0.820**	**0.705**	**R^2**	**0.792**	**0.757**	**R^2**	**0.779**	**0.596**
Adjusted R^2	**0.741**	**0.679**	**Adjusted R^2**	**0.700**	**0.708**	**Adjusted R^2**	**0.669**	**0.560**
F statistic	**10.354** [.000]**	**26.327** [.000]**	**F statistic**	**8.635** [.000]**	**15.559** [.000]**	**F statistic**	**7.058** [.000]**	**16.254** [.000]**

[a] Multiple Regression , [b] Stepwise Regression,

*** indicates significance at 5% level, ** indicates significance at 1% level ,**

(t-statistics) , [p-value]

Table 6.1 continued								
Results of Multiple Regression of Chemical Industry: 37 Companies								
Dependent variabe: LTD/TA Ratio			Dependent variable: TL/TA ratio					
Column 8			Column 9			Column 10		
	Run5[a]	Run5[b]		Run 1[a]	Run 1[b]		Run 4[a]	Run 4[b]
Intercept	0.379	-0.120	Intercept	0.432	0.752	Intercept	0.878	0.748
Log of TNA	-0.009 (-0.720) [0.478]	Excluded	Log of sales	0.012 (0.764) [0.452]	Excluded	Log of sales	0.003 (0.206) [0.839]	Excluded
PBT/TNA	—	—	PBT/TNA	-0.37 (-1.111) [0.277]	-0.805 (-4.433)** [.000]	PBT/TNA	-1.096 (-2.870)** [0.008]	-1.352 (-4.956)** [.000]
NFA/TNA	0.327 (2.647)* [0.014]	0.627 (7.394)** [.000]	(Nfa+Inv+AR)/TNA	0.313 (1.235) [0.228]	Excluded	NFA/TNA	-0.078 (-0.435) [0.668]	Excluded
COV of PBIT to TNA	0.039 (0.706) [0.487]	0.123 (2.548)* [0.016]	COV of PBIT to TNA	0.089 (1.027) [0.314]	Excluded	COV of PBIT to TNA	0.025 (0.295) [0.771]	Excluded
CAGR of TNA	0.251 (1.274) [0.214]	Excluded	CAGR of TNA	0.351 (1.290) [0.209]	Excluded	CAGR of TNA	0.256 (0.962) [0.346]	Excluded
Log of age of firm	-0.048 (-1.210) [0.237]	Excluded	Log of age of firm	-0.021 (-0.451) [0.656]	Excluded	Log of age of firm	-0.029 (-0.513) [0.613]	Excluded
Equity Div/PAT	-0.041 (-1.094) [0.284]	Excluded	Equity Div/PAT	0.013 (0.286) [0.777]	Excluded	Equity Div/PAT	-0.022 (-0.404) (0.690)	Excluded
CA/CL	-0.011 (-1.812) [0.082]	Excluded	CA/CL	-0.034 (-3.954)** [0.001]	-0.037 (-5.963)** [.000]	CA/CL	-0.031 (-3.346)** [0.003]	-0.030 (-4.870)** [.000]
Net exp/Sales	-0.124 (-2.071)* [0.049]	-0.194 (-3.937)** [.000]	Net exp/Sales	-0.056 (-0.711) [0.484]	Excluded	Net exp/Sales	-0.063 (-0.763) [0.453]	Excluded
R&D/Sales	-3.502 (-2.454)* [0.021]	Excluded	R&D/Sales	-2.874 (-1.564) [0.130]	Excluded	R&D/Sales	-2.404 (-1.193) [0.244]	Excluded
INT/DEBT	-0.497 (-3.011)** [0.006]	Excluded	INT/DEBT	-0.433 (-2.053) [0.051]	Excluded	INT/DEBT	-0.414 (-1.788) [.0860]	Excluded
DIV/SC	-0.245 (-1.479) [0.152]	Excluded	DIV/SC	—	—	DIV/SC	0.524 (1.549) [0.134]	0.685 (2.548)* [0.016]
PBDIT/INT	—	—	PBDIT/INT	—	—	PBDIT/INT	—	—
R^2	**0.808**	**0.676**	**R^2**	**0.724**	**0.607**	**R^2**	**0.734**	**0.672**
Adjusted R^2	**0.723**	**0.646**	**Adjusted R^2**	**0.603**	**0.584**	**Adjusted R^2**	**0.602**	**0.642**
F statistic	**9.551**** **[.000]**	**22.941**** **[.000]**	**F statistic**	**5.970**** **[.000]**	**26.244**** **[.000]**	**F statistic**	**5.530**** **[.000]**	**22.488**** **[.000]**

[a] Multiple Regression, [b] Stepwise Regression,
*** indicates significance at 5% level, ** indicates significance at 1% level,**
(t-statistics), [p-value]

6.2.3 Results of Multiple Regressions of LTD/TA Ratio for Chemical Industry:

The value of R^2 is highest in Run 2^b: Column-6 and indicates that a maximum of 70.8% variations in LTD/TA ratio are explained by significant indicators selected in Regression Run 2^b: Column-6. The significant determinants of LTD/TA ratio in Chemical industry are **Profitability, Collateral, Volatility, Age, Dividend Payout, Net Exports/Sales, Uniqueness and Cost of Borrowings.**

Both **Profitability** indicators PBT/TNA and PBITDA/TGA have significant negative impact on LTD/TA ratio of Chemical industry and the 't' statistic is significant at 1% level of significance. This is in confirmation with the Pecking Order Theory and indicates that companies in Chemical industry prefer using internally generated reserves created out of profits to finance their assets.

Collateral effect as measured by indicators NFA/ TNA and GFA/ TGA has significant positive impact on LTD/TA ratio confirming that in Chemical industry Long Term Debt is used to finance fixed assets and fixed assets in turn act as Collaterals to obtain Long Term Debt. Volatility indicator COV of PBIT/TNA has significant positive impact on LTD/TA ratio which is in line with the overall regression results of 140 sample FDI Companies together. This result indicates that in spite of volatile earnings, FDI Companies in Chemical industry do not hesitate to borrow Long Term Funds. This also indicates that these companies must be highly profitable companies with large built up cash reserves to meet the costs of long term funding requirements in case of need.

Age is a significant predictor of LTD/TA ratio in Chemical industry and enters the model with a negative coefficient, the 't' statistic being significant at 1% level of significance. Mature age companies either have enough internally generated reserves or they do not need to borrow as they have exhausted their growth opportunities and hence Age has negative impact on LTD/TA ratio.

Dividend Payout indicator 'Equity Div/PAT' has significant negative impact on LTD/TA ratio indicating that a higher Dividend Payout ratio would mean lower levels of Long Term Debt. This might be due to the fact that companies in Chemical industry might be following sticky dividend policies as suggested by Myers (1984) and might be setting out target Dividend Payout ratios. This results in lower preference for long term when there are high Dividend Payouts. **Net exports/Sales** has significant negative impact on LTD/TA ratio in all the reported regression runs and the't' statistic is significant at 1% level of significance. This indicates that companies from Chemical industry who are net exporters already avail lot of tax concessions and other benefits by virtue of being net exporters and hence resort to lower levels of Long Term Debt in their capital structure.

Uniqueness indicator R&D / sales has significant negative impact on LTD/TA ratio, the 't' statistic being significant at 1% level of significance. Although the result is consistent with the results of Titman & Wessel's (1988)[1] and Bhaduri (2002)[2], it is in contrast to overall regression results of 140 Sample FDI Companies where Uniqueness had positive impact on Long Term Debt ratio. This might be due to the fact that these companies from Chemical industry who are engaged in research activities either believe funding their research and development activities through internally generated funds or might be facing difficulty in raising Long Term Debt funds due to unique nature of their business activity.

Cost of Borrowing indicator INT/DEBT has significant negative impact on LTD/TA ratio of Chemical industry, the 't' statistic being significant at 1% level of significance indicating that as the cost of borrowing increase, companies dependence on long term borrowings also reduces. Since Cost of Borrowing has positive impact on TC&E/TA ratio of Chemical industry, it means that companies from Chemical industry meet their financing requirements by availing Short Term Trade Credit when Cost of Borrowing increases.

The impact of indicators for **Size, Growth rate, Liquidity, Debt Service Capacity and Cost of Equity** is found insignificant on LTD/TA ratio of companies in Chemical industry.

6.2.4 Results of Multiple Regressions of TL/TA Ratio for Chemical Industry:

The value of R^2 is highest in Run 4^b: Column-10 and indicates that a maximum of 64.2% variations in TL/TA ratio is explained by significant indicators selected in Regression Run 4^b: Column-10. The significant determinants of TL/TA ratio in Chemical industry are **Profitability, Liquidity and Cost of Equity.**

Profitability indicator PBT/TNA has significant negative impact on TL/TA ratio of Chemical industry and the 't' statistic is significant at 1% level of significance confirming the predictions of Pecking Order Theory. **Liquidity** as measured by CA/CL ratio has significant negative impact on TL/TA ratio, the 't' statistic is significant at 1% level of significance indicating that greater liquid assets mean lower reliance on debt. **Cost of Equity** indicator DIV/SC has significant positive impact on

TL/TA ratio of Chemical industry and the't' statistic is significant at 5% level of significance. This might be due to the fact that companies from Chemical industry heavily rely on Short Term Debt like Trade Credit (Table 4.4, Ch. 4) and a major proportion of Total liabilities come from Short Term Debt Funds. Therefore, when the Cost of Equity increases, the companies meet their financing requirements by resorting to Short Term Trade Credit and hence the positive impact of Cost of Equity on TL/TA ratio.

The impact of indicators for **Size, Collateral, Volatility, Growth rate, Age, Dividend Payout, Net exports/Sales, Uniqueness and Cost of Debt** have insignificant impact on TL/TA ratio of companies in Chemical Industry.

Table 6.1.1

Summary of Mutiple Regression Results in Chemical Industry (37 FDI Companies)

Dependent variables- Debt Ratios		STD1/TA	TC&E/TA	LTD/TA	TL/TA
Independent Variables	**Indicators**				
Size	Log of sales	N.S	+VE**	N.S	N.S
	Log of TNA	N.S	N.S	N.S	---
	Log of GTFA	---	---	N.S	---
Profitability	PBT/TNA	N.S	N.S	-VE**	-VE**
	PBITDA/TGA	---	N.S	-VE**	---
Collateral	NFA/TNA	-VE**	N.S	+VE**	N.S
	GFA/TGA	---	-VE**	+VE**	---
	(Nfa+Inv+AR)/TNA	---	N.S	N.S	N.S
	INV/TNA	N.S	---	---	---
Volatility	COV of PBIT/ TNA	N.S	+VE**	N.S	N.S
	SD of PBITDA/TGA	---	N.S	N.S	---
Growth rate	CAGR of TNA	N.S	N.S	N.S	N.S
	CAGR of sales	N.S	N.S	N.S	---
NDTS	Depr/TGA	---	---	---	---
Debt Service capacity	PBDIT/INT	---	N.S	N.S	---
Age	Log of age of firm	N.S	+VE**	-VE**	N.S
Dividend payout	Equity Div/PAT	N.S	+VE*	-VE*	N.S
Liquidity	CA/CL	-VE**	-VE**	N.S	-VE**
Net Exports	Net exp/Sales	N.S	N.S	-VE**	N.S
Cost of Equity	DIV/SC	N.S	---	---	+VE*
Uniqueness	R&D/Sales	N.S	N.S	-VE**	N.S
Cost of Borrowing	INT/DEBT	N.S	N.S	-VE**	N.S

*** Indicates significance at 5% level, ** indicates significance at 1% level**

Not Significant=(NS), Positive= (+VE), Negative =(-VE)

A Dash means -- the indicator is not included in final regression runs

Table 6.1.1 presents the results for four measures of debt in summary form together.

6.3 Results of Multiple Regression Runs: Machinery Industry

Table 6.2 presents the results of multiple regression runs on Debt Ratios of Chemical industry. Only significant regressions are reported in Table 6.2. The summary results of all the regression runs conducted on all the four Debt Ratios of Machinery industry are presented at the end of the chapter. Table 6.2.4 presents summary results of all the regression runs on Debt Ratio: STD1/TA. Table 6.2.5 presents summary results of all the regression runs on Debt Ratio: TC&E/TA ratio. Table 6.2.6 presents summary results of all the regression runs on Debt Ratio: LTD/TA. Table 6.2.7 presents summary results of all the regression runs on TL/TA ratio. Correlation matrix of explanatory variables of Debt Ratios from Machinery industry is presented at the end of the chapter in Table 6.2.2. Variance inflationary factors for each reported multiple regression run of Machinery industry are presented at the end of the chapter in Table 6.2.3.

6.3.1 Results of Multiple Regressions on STD1/TA Ratio in Machinery Industry:
The value of R^2 in reported regression Run6[b]: Column-1 is 0.620 indicating that 62% variations in STD1/TA ratio are explained by significant indicators selected in Run6[b]. The three significant predictors of STD1/TA ratio in Machinery industry are **Collateral, Volatility** and **Liquidity.** It is found that **Collateral** indicator NFA/TNA has significant negative impact on STD1/TA ratio, the 't' statistic being significant at 1% level of significance. This result is in confirmation of the overall regression results of 140 sample FDI Companies. **Volatility** indicator COV of PBIT/TNA has significant positive impact on STD1/TA ratio of Machinery and the 't' statistic is significant at 1% level of significance indicating preference for Short Term Debt with increase in volatility of earnings. **Liquidity** as measured by CA/CL ratio has significant negative impact on STD1/TA ratio, the 't' statistic being significant at 1% level of significance, indicating that availability of liquid assets would mean that companies will prefer lower amount of Short Term Debt funds as they can finance their short term working capital requirements through these- liquid- assets.

The impact of indicators for **Size, Growth rate, Age, Dividend Payout, Net Exports/Sales, Uniqueness, Cost of Borrowing and Cost of Equity** is found insignificant on STD1/TA ratio of companies in Machinery industry.

6.3.2 Results of Multiple Regressions of TC&E/TA Ratio for Machinery Industry:

Regression Run 1: Column-2 and Run 7: Column-3 on TC&E/TA in Table 6.2 reveals that the significant determinants of TC&E/TA ratio in Machinery industry are **Profitability, Collateral, Volatility and Liquidity.** The value of R^2 is highest in Run 7^b: Column-3 and indicates that a maximum of 84% variations in TC&E/TA ratio are explained by significant indicators selected in Regression Run 7^b : Column-3.

Profitability indicator PBITDA/GFA has significant negative impact on TC&E/TA ratio of Machinery industry and the 't' statistic is significant at 1% level of significance. This indicates that profitable companies in Machinery industry resort to lower levels of trade credit as they have sufficient funds to finance their short term working capital requirements.

Collateral indicator GFA/TGA has significant negative impact on TC&E/TA ratio confirming that tangible fixed assets act as collaterals to obtain more of Long Term Debt rather than Short Term Debt.

Volatility indicator COV of PBIT/TNA has significant positive impact on TC&E/TA ratio of Machinery industry, the 't' statistic significant at 1% level of significance, which again confirms the overall regression results of 140 sample FDI Companies and indicates that FDI Companies in Machinery industry with volatile incomes prefer Short Term Trade Credit as a source of finance.

Liquidity as measured by CA/CL ratio has significant negative impact on TC&E/TA ratio, indicating that greater liquid assets mean lower reliance on Trade Credits.

The impact of indicators for **Size, Growth rate, Age, Dividend Payout, Net Exports/Sales, Uniqueness, Cost of Debt, Debt Service capacity, Cost of Equity** and **NDTS** is found insignificant on TC&E/TA ratio of companies in Chemical industry.

Table 6.2 Results of Multiple Regression of Machinery Industry: 38 Companies								
Dependent variable: STD1 / TA Ratio			**Dependent Variable :TC & E / TA Ratio**					
Column 1			**Column 2**			**Column 3**		
	Run6[a]	**Run6[b]**		**Run 1[a]**	**Run 1[b]**		**Run7[a]**	**Run7[b]**
Intercept	0.867	0.633	Intercept	0.699	0.517	Intercept	0.727	0.581
Log of TNA	0.018 (0.923) [0.365]	Excluded	Log of sales	0.014 (1.342) [0.191]	Excluded	Log of GTFA	0.022 (-2.024)* [0.055]	Excluded
PBT / TNA	-0.797 (-1.499) [0.147]	Excluded	PBT / TNA	-0.375 (-1.469) [0.154]	Excluded	PBITDA / TGA	-1.008 (-2.731)* [0.012]	-0.880 (-4.133)** [.000]
NFA / TNA	-0.869 (-4.254)** [.000]	-0.618 (-3.507)** [0.001]	NFA / TNA	-0.695 (-5.899)** [.000]	-0.513 (-4.763)** [.000]	GFA / TGA	-0.462 (-3.088)** [0.005]	-0.324 (-4.537)** [.000]
INV / TNA	0.544 (1.273) [0.215]	Excluded	INV / TNA	—	—	INV / TNA	—	—
COV of PBIT to TNA	0.052 (3.236)** [0.004]	0.065 (5.558)** [.000]	COV of PBIT to TNA	0.033 (3.545)** [0.002]	0.039 (5.506)** [.000]	SD of PBITDA / TGA	0.913 (4.561)** [.000]	0.962 (6.221)** [.000]
CAGR of sales	0.162 (0.436) [0.667]	Excluded	CAGR of TNA	-0.042 (-0.218) [0.829]	Excluded	CAGR of sales	-0.113 (-0.603) [0.553]	Excluded
Log of age of firm	-0.137 (-2.122)* [0.044]	Excluded	Log of age of firm	-0.064 (-1.930) [0.065]	Excluded	Log of age	-0.037 (-1.059) [0.300]	Excluded
Equity Div / PAT	0.183 (1.555) [0.133]	Excluded	Equity Div / PAT	0.128 (1.977) [0.059]	Excluded	Eq Div / PAT	0.043 (0.707) [0.487]	Excluded
CA / CL	-0.009 (-0.517) [0.610]	-0.03 (-2.549)* [0.015]	CA / CL	-0.035 (-4.116)** [.000]	-0.044 (-6.106)** [.000]	CA / CL	-0.032 (-3.916)** [0.001]	-0.036 (-5.625)** [.000]
Net exp / Sales	0.328 (1.760) [0.091]	Excluded	Net exp / Sales	0.188 (1.825) [0.080]	Excluded	Net exp / Sales	0.101 (0.864) [0.397]	Excluded
R&D / Sales	-4.759 (-1.118) [0.275]	Excluded	R&D / Sales	-4.631 (-1.978) [0.059]	Excluded	R&D / Sales	-3.480 (-1.413) [0.171]	Excluded
INT / DEBT	0.545 (1.111) [0.278]	Excluded	INT / DEBT	0.301 (1.171) [0.252]	Excluded	INT / DEBT	-0.007 (-0.029) [0.977]	Excluded
PBDIT / INT	—	—	PBDIT / INT	—	—	PBDIT / INT	.000 (0.949) [0.352]	Excluded
DIV / SC	0.682 (0.768) [0.450]	Excluded	DIV / SC	—	—	DIV / SC	-0.206 (-0.437) [0.666]	Excluded
Depr / TGA	—	—	Depr / TGA	—	—	Depr / TGA	-0.368 (-0.195) [0.847]	Excluded
R^2	**0.774**	**0.651**	**R^2**	**0.863**	**0.784**	**R^2**	**0.892**	**0.857**
Adjusted R^2	**0.651**	**0.620**	**Adjusted R^2**	**0.805**	**0.765**	**Adjusted R^2**	**0.826**	**0.840**
F statistic	**6.306**** **[.000]**	**21.122**** **[.000]**	**F statistic**	**14.885**** **[.000]**	**41.100**** **[.000]**	**F statistic**	**13.516**** **[.000]**	**49.474**** **[.000]**

[a] Multiple Regression , [b] Stepwise Regression,

*** indicates significance at 5% level, ** indicates significance at 1% level ,**
(t-statistics) , [p-value]

Table 6.2 continued Results of Multiple Regression of Machinery Industry: 38 Companies Dependent variable: LTD / TA Ratio								
Column 4			Column 5			Column 6		
	Run 1[a]	Run 1[b]		Run4[a]	Run4[b]		Run5[a]	Run5[b]
Intercept	-0.099	0.118	Intercept	-0.112	-0.030	Intercept	-0.07	-0.057
Log of sales	-0.011 (-0.892) [0.381]	Excluded	Log of GTFA	0.004 (0.303) [0.765]	Excluded	Log of TNA	-0.005 (-0.365) [0.718]	Excluded
PBT / TNA	-0.349 (-1.157) [0.258]	-0.809 (-4.629)** [.000]	PBITDA / TGA	0.013 (0.035) [0.972]	-0.516 (-1.963)* [0.058]	PBT / TNA	---	---
NFA / TNA	0.519 (3.734)** [0.001]	0.371 (3.174)** [0.003]	GFA / TGA	0.467 (3.859)** [0.001]	0.390 (4.148)** [.000]	NFA / TNA	0.525 (3.636)** [0.001]	0.471 (4.088)** [.000]
COV of PBIT to TNA	0.015 (1.327) [0.196]	Excluded	SD of PBITDA	0.666 (2.812)** [0.009]	0.606 (2.899)** [0.007]	COV of PBIT to TNA	0.019 (1.801) [0.083]	0.03 (4.134)** [.000]
CAGR of TNA	-0.017 (-0.077) [0.939]	Excluded	CAGR of sales	-0.207 (-0.958) [0.347]	Excluded	CAGR of TNA	-0.139 (-0.585) [0.563]	Excluded
Log of age of firm	0.063 (1.620) [0.117]	Excluded	Log of age	0.038 (0.915) [0.369]	Excluded	Log of age of firm	0.048 (1.173) [0.251]	Excluded
Equity Div / PAT	-0.098 (-1.278) [0.213]	Excluded	Eq Div / PAT	-0.140 (-1.999) [0.057]	Excluded	Equity Div / PAT	-0.114 (-1.396) [0.175]	Excluded
CA / CL	-0.008 (-0.838) [0.410]	Excluded	CA / CL	-0.015 (-1.538) [0.137]	Excluded	CA / CL	-0.011 (-1.190) [0.245]	Excluded
Net exp / Sales	-0.300 (-2.467)* [0.021]	Excluded	Net exp / Sales	-0.415 (-3.276)** [0.003]	-0.332 (-3.149)** [0.003]	Net exp / Sales	-0.315 (-2.399)* [0.024]	-0.323 (-3.232)** [0.003]
R&D / Sales	0.023 (0.008) [0.993]	Excluded	R&D / Sales	3.262 (1.100) [0.282]	Excluded	R&D / Sales	0.278 (0.095) [0.925]	Excluded
INT / DEBT	-0.208 (-0.686) [0.499]	Excluded	INT / DEBT	-0.520 (-1.751) [0.092]	Excluded	INT / DEBT	-0.294 (-0.948) [0.352]	Excluded
PBDIT / INT	---	---	PBDIT / INT	.000 (-0.536) [0.597]	Excluded	PBDIT / INT	---	---
DIV / SC	---	---	DIV / SC	---	---	DIV / SC	-0.150 (-0.294) [0.771]	Excluded
Depr / TGA	---	---	Depr / TGA	---	---	Depr / TGA	---	---
R^2	**0.637**	**0.497**	**R^2**	**0.666**	**0.530**	**R^2**	**0.61**	**0.529**
Adjusted R^2	**0.483**	**0.468**	**Adjusted R^2**	**0.506**	**0.473**	**Adjusted R^2**	**0.445**	**0.487**
F statistic	**4.142** [.001]**	**17.261** [.000]**	**F statistic**	**4.152** [.001]**	**9.293** [.000]**	**F statistic**	**3.702** [0.003]**	**12.732** [.000]**

[a] Multiple Regression, [b] Stepwise Regression,
*** indicates significance at 5% level, ** indicates significance at 1% level,**
(t-statistics), [p-value]

Table 6.2 continued Results of Multiple Regression of Machinery Industry: 38 Companies								
Dependent variabe: LTD / TA Ratio			Dependent variable: TL / TA ratio					
Column 7			Column 8			Column 9		
	Run6[a]	Run6[b]		Run 1[a]	Run 1[b]		Run 2[a]	Run 2[b]
Intercept	-0.089	0.07	Intercept	0.367	-0.044	Intercept	0.572	0.625
Log of GTFA	.000 (-0.013) [0.990]	Excluded	Log of sales	-0.019 (-0.814) [0.423]	Excluded	Log of sales	-0.016 (-0.721) [0.477]	Excluded
PBITDA / TGA	-0.211 (-0.512) [0.613]	-0.610 (-2.548)* [0.016]	PBT / TNA	-0.388 (-0.636) [0.530]	Excluded	PBT / TNA	-0.986 (-1.834) [0.078]	-1.187 (-2.768)** [0.009]
GFA / TGA	0.783 (4.699)** [.000]	0.716 (5.235)** [.000]	(Nfa+Inv+AR) / TNA	0.576 (1.832) [0.078]	0.64 (2.854)** [0.007]	INV / TNA	1.199 (2.396)* [0.024]	Excluded
SD of PBITDA	0.521 (2.340)* [0.028]	Excluded	COV of PBIT to TNA	0.084 (4.046)** [.000]	0.095 (6.725)** [.000]	COV of PBIT to TNA	0.075 (3.789)** [0.001]	0.068 (3.711)** [0.001]
CAGR of sales	-0.021 (-0.099) [0.922]	Excluded	CAGR of TNA	0.336 (0.790) [0.436]	Excluded	CAGR of TNA	0.863 (1.868) [0.073]	Excluded
Log of age	0.038 (0.986) [0.334]	Excluded	Log of age of firm	-0.069 (-0.880) [0.387]	Excluded	Log of age of firm	-0.096 (-1.231) [0.229]	Excluded
Eq Div / PAT	-0.121 (-1.799) [0.085]	Excluded	Equity Div / PAT	0.038 (0.280) [0.782]	Excluded	Equity Div / PAT	0.091 (0.679) [0.503]	Excluded
CA / CL	-0.013 (-1.385) [0.179]	Excluded	CA / CL	-0.027 (-1.431) [0.164]	Excluded	CA / CL	-0.018 (-0.923) [0.365]	Excluded
Net exp / Sales	-0.500 (-3.832)** [0.001]	-0.360 (-3.611)** [0.001]	Net exp / Sales	0.104 (0.436) [0.666]	Excluded	Net exp / Sales	0.048 (0.221) [0.827]	Excluded
R&D / Sales	2.886 (1.052) [0.304]	Excluded	R&D / Sales	-5.278 (-1.025) [0.315]	Excluded	R&D / Sales	-3.924 (-0.780) [0.442]	Excluded
INT / DEBT	-0.528 (-1.918) [0.068]	Excluded	INT / DEBT	0.652 (1.137) [0.266]	Excluded	INT / DEBT	0.835 (1.477) [0.152]	Excluded
DIV / SC	0.128 (0.244) [0.810]	Excluded	DIV / SC	—	—	DIV / SC	—	—
PBDIT / INT	-4.30E-05 (-0.196) [0.846]	Excluded	PBDIT / INT	—	—	PBDIT / INT	—	—
Depr / TGA	-5.551 (-2.645)** [0.014]	-6.808 (-3.736)** [0.001]	Depr / TGA	—	—	Depr / TGA	—	—
R^2	**0.744**	**0.585**	**R^2**	**0.733**	**0.635**	**R^2**	**0.753**	**0.631**
Adjusted R^2	**0.589**	**0.535**	**Adjusted R^2**	**0.620**	**0.614**	**Adjusted R^2**	**0.649**	**0.610**
F statistic	**4.783**** **[.000]**	**11.645** **[.000]**	**F statistic**	**6.492**** **[.000]**	**30.420**** **[.000]**	**F statistic**	**7.210**** **[.000]**	**29.884**** **[.000]**

[a] Multiple Regression , [b] Stepwise Regression,

*** indicates significance at 5% level, ** indicates significance at 1% level ,**

(t-statistics) , [p-value]

6.3.3 Results of Multiple Regressions of LTD/TA Ratio for Machinery Industry

Out of the four regression runs reported in Table 6.2 on LTD/TA ratio, the value of R^2 is highest in Run 6^b: Column-7 and indicates that a maximum of 53.5% variance in LTD/TA ratio in Machinery industry is explained by significant indicators selected in regression Run 6^b: Column-7. The significant determinants of LTD/TA ratio in Machinery industry are **Profitability, Collateral, Volatility, Net Exports/Sales and NDTS.**

Both **Profitability** indicators PBT/TNA and PBITDA/TGA have significant negative impact on LTD/TA ratio of Machinery industry and the 't' statistic is significant at 1% and 5% level of significance respectively. These results confirm to the predictions of Pecking order theory and indicate that profitable companies in Machinery industry prefer using internally generated reserves finance their investments. **Collateral** effect as measured by indicators NFA/TNA and GFA/TGA has significant positive impact on LTD/TA ratio and the 't' statistic is significant at 1% level of significance confirming that in Machinery industry tangible fixed assets act as Collaterals to obtain Long Term Debt.

Volatility indicator COV of PBIT/TNA has significant positive impact on LTD/TA ratio of Machinery industry which is in line with the overall regression results of 140 sample FDI Companies together. This result indicates that inspite of volatile earnings; FDI Companies in Machinery industry continue to borrow Long Term funds. **Net exports/Sales** has significant negative impact on LTD/TA ratio of Machinery industry in all the reported regression runs and the 't' statistic is significant at 1% level of significance. These results indicate that companies from Machinery industry which are net exporters resort to lower levels of Long Term Debt in their Capital Structure due to tax concessions and other benefits available to them. **NDTS** indicator Depr/TGA has significant negative impact on LTD/TA ratio of Machinery industry and is significant at 1% level of significance indicating that existence of Non Debt Tax Shields would mean lower Long Term Debt ratios in Machinery industry. This result is consistent with findings of Kakani (1999)[3], and Song (2005)[4].

The impact of indicators for **Size, Growth rate, Age, Dividend Payout, Liquidity, Uniqueness, Cost of Debt, Debt Service Capacity and Cost of Equity** is found insignificant on LTD/TA ratio of companies in Machinery industry.

6.3.4 Results of Multiple Regressions of TL/TA Ratio for Machinery industry

The value of R^2 is highest in Run 1^b:Column-8 and indicates that a maximum of 61.4% variance in TL/TA ratio of Machinery industry is explained by significant indicators selected in Regression Run ^{b}: Column-8. The significant determinants of TL/TA ratio in Machinery industry are **Profitability, Collateral and Volatility.**

Profitability indicator PBT/TNA has significant negative impact on TL/TA ratio of Machinery industry and the 't' statistic is significant at 1% level of significance confirming the predictions of Pecking Order Theory.

The **Collateral** indicator (Nfa+Inv+AR)/TNA has significant positive impact on TL/TA ratio of machinery industry. Since Total Liabilities include a substantial proportion of Short Term Debt, it may be possible that Inventories and Accounts receivables act as Collaterals to obtain Short Term Debt while tangible fixed assets are used as Collaterals to obtain Long Term Debt and hence (Nfa+Inv+AR)/TNA is a significant determinant of TL/TA ratio of Machinery industry.

Volatility indicator COV of PBIT/TNA has significant positive impact on TL/TA ratio of Machinery industry and the findings are consistent with the overall regression results of 140 sample FDI Companies together.

The impact of indicators for **Size, Growth rate, Age, Dividend Payout, Liquidity, Net exports/Sales, Uniqueness and Cost of Debt** is found insignificant on TL/TA ratio of companies in Machinery industry.

Table No.6.2.1					
Summary of Mutiple Regressions Result in Machinery Industry (38 FDI Companies)					
Dependent variables- Debt Ratios		STD1/TA	TC&E/TA	LTD/TA	TL/TA
Independent Variables	Indicators				
Size	Log of sales	N.S	N.S	N.S	N.S
	Log of TNA	N.S	---	N.S	---
	Log of GTFA	---	N.S	N.S	---
Profitability	PBT/TNA	N.S	N.S	-VE*	-VE*
	PBITDA/TGA	---	-VE**	-VE**	---
Collateral	NFA/TNA	-VE**	-VE**	+VE**	---
	GFA/TGA	---	-VE**	+VE**	---
	(Nfa+Inv+AR)/TA	---	N.S	N.S	+VE**
	INV/TNA	N.S	N.S	---	N.S
Volatility	COV of PBIT/ TNA	+VE**	+VE**	+VE**	+VE**
	SD of PBITDA/TGA	---	+VE**	+VE**	---
Growth rate	CAGR of TNA	N.S	N.S	N.S	N.S
	CAGR of sales	N.S	N.S	N.S	---
NDTS	Depr/TGA	---	N.S	-VE**	---
Debt Service capacity	PBDIT/INT	---	N.S	N.S	---
Age	Log of age of firm	N.S	N.S	N.S	N.S
Dividend payout	Equity Div/PAT	N.S	N.S	N.S	N.S
Liquidity	CA/CL	-VE**	-VE**	N.S	N.S
Net Exports	Net exp/Sales	N.S	N.S	-VE**	N.S
Cost of Equity	DIV/SC	N.S	N.S	N.S	---
Uniqueness	R&D/Sales	N.S	N.S	N.S	N.S
Cost of Borrowing	INT/DEBT	N.S	N.S	N.S	N.S
* Indicates significance at 5% level, ** indicates significance at 1% level					
Not Significant=(NS), Positive= (+VE), Negative =(-VE)					
A Dash means -- the indicator is not included in final regression runs					

6.4 Results of Multiple Regression Runs: Transport Industry

Table 6.3 presents the results of multiple regression runs on Debt Ratios of Transport industry. Only significant regressions are reported in Table 6.3. The summary results of all the regression runs conducted on all the four Debt Ratios of Transport industry are presented at the end of the chapter. Table 6.3.4 presents summary results of all the regression runs on Debt Ratio: STD1/TA. Table 6.3.5 presents summary results of all the regression runs on Debt Ratio: TC&E/TA ratio. Table 6.3.6 presents summary results of all the regression runs on Debt Ratio: LTD/TA. Table 6.3.7 presents summary results of all the regression runs on TL/TA ratio. Correlation matrix of explanatory variables of Debt Ratios from Transport industry is presented at the end of the chapter in Table 6.3.2. Variance inflationary factors for each reported multiple regression run of Transport industry are presented at the end of the chapter in Table 6.3.3.

6.4.1 Results of Multiple Regressions of STD1/TA Ratio for Transport industry
Stepwise multiple regression results conducted on STD1/TA ratio of Transport industry did not indicate any significant determinants for the ratio as none of the selected indicators in regressions conducted on STD1/TA ratio entered the final stepwise regression models. Hence the results are not reported in Table 6.3.

6.4.2 Results of Multiple Regressions on TC&E/TA Ratio in Transport industry
Regression Run 1: Column-1, Run 3: Column 2 and Run 9: Column 3 are conducted on TC&E/TA ratio of Transport industry in Table 6.3 reveal that the significant determinants of TC&E/TA ratio in Transport industry are **Collateral, Volatility, Dividend payout and Liquidity.** The value of R^2 is highest in Run 9^b: Column 3 and indicates that almost 95.3% variance in TC&E/TA ratio is explained by significant indicators selected in Regression Run 9^b: Column 3. All the regression runs reported for TC&E/TA ratio of Transport industry reveal high explanatory power of the regression model as R^2 ranges from .852 in Run1^b: Column-1 to .953 in Run9^b: Column 3.

Collateral indicator NFA/TNA has significant negative impact on TC&E/TA ratio whereas INV/TNA has significant positive impact on TC&E/TA ratio of Transport industry confirming that fixed assets act as collaterals to obtain Long Term Debt and non fixed assets like Inventories act as Collaterals to obtain Short Term Trade Credits. Surprisingly, **Volatility** indicator COV of PBIT/TNA has significant negative impact on TC&E/TA ratio of Transport industry, the 't' statistic being significant at 5% level of significance. Although this result is consistent with predictions of both Pecking Order Theory and the Trade-off Theory, it contradicts the overall regression results of 140 sample FDI Companies. It indicates that FDI Companies in Transport industry with volatile incomes prefer to lower their reliance on short term trade credits. This seems to be a unique feature of Transport industry and this might be due to the fact that companies from Transport industry either must be having sufficient liquidity to meet their short term financing requirements or might be using their built in internally generated funds to meet their working capital requirements.

Table 6.3								
Results of Multiple Regression of Transport Industry: 18 Companies								
Dependent Variable :TC&E/TA Ratio								
Column 1			Column 2			Column 3		
	Run 1[a]	Run 1[b]		Run3[a]	Run3[b]		Run9[a]	Run 9[b]
Intercept	0.561	0.492	Intercept	0.243	0.329	Intercept	0.498	0.443
Log of sales	0.005 (1.089) [0.318]	Excluded	Log of sales	-0.003 (-0.438) [0.677]	Excluded	Log of sales	0.003 (0.803) [0.467]	Excluded
PBT/TNA	-0.261 (-1.670) [0.146]	Excluded	PBT/TNA	0.318 (1.651) [0.150]	Excluded	PBT/TNA	0.000 (-0.001) [1.000]	Excluded
NFA/TNA	-0.271 (-4.666)** [0.003]	-0.182 (-3.201)** [0.006]	NFA/TNA	—	—	NFA/TNA	-0.222 (-3.643)** [.000]	-0.174 (-5.408)** [.000]
INV/TNA	—	—	INV/TNA	0.554 (2.490)* [0.047]	0.393 (3.531)** [0.003]	INV/TNA	0.289 (1.984) [0.118]	0.403 (5.630)** [.000]
COV of PBIT to TNA	-0.049 (-1.772) [0.127]	Excluded	COV of PBIT to TNA	-0.022 (-0.538) [0.610]	Excluded	COV of PBIT to TNA	-0.057 (-1.826) [0.142]	-0.036 (-2.235)* [.000]
CAGR of TNA	-0.010 (-0.045) [0.966]	Excluded	CAGR of TNA	0.050 [0.147] [0.888]	Excluded	CAGR of sales	-0.035 (-0.192) [0.857]	Excluded
Log of age of firm	0.023 (2.031) [0.089]	Excluded	Log of age of firm	-0.002 (-0.086) [0.935]	Excluded	Log of age of firm	0.015 1.509 0.206	Excluded
Equity Div/PAT	-0.051 (-2.114) [0.079]	-0.062 (-2.645)** [0.019]	Equity Div/PAT	0.004 (0.110) [0.916]	Excluded	Equity Div/PAT	-0.017 (-0.630) [0.563]	-0.033 (-2.320)* [0.039]
CA/CL	-0.073 (-9.180) [.000]	-0.067 (-9.663)** [.000]	CA/CL	-0.065 (-5.753)** [0.001]	-0.063 (-9.874)** [.000]	CA/CL	-0.076 (-10.407)** [.000]	-0.074 (-17.568)** [.000]
Net exp/Sales	(0.220) (2.935)* [0.026]	Excluded	Net exp/Sales	-0.113 (-0.780) [0.465]	Excluded	Net exp/Sales	0.121 (1.293) [0.266]	Excluded
R&D/Sales	(-3.200) (-3.480)** [0.013]	Excluded	R&D/Sales	-0.249 (-0.146) [0.888]	Excluded	R&D/Sales	-2.847 (-1.923) [0.127]	Excluded
INT/DEBT	-0.447 (-1.504) [0.183]	Excluded	INT/DEBT	0.317 (0.701) [0.510]	Excluded	INT/DEBT	-0.408 (-1.151) [0.314]	Excluded
DIV/SC	—	—	DIV/SC	—	—	DIV/SC	-0.304 (-0.955) [0.394]	Excluded
R^2	0.969	0.878	R^2	0.928	0.869	R^2	0.987	0.967
Adjusted R^2	0.911	0.852	Adjusted R^2	0.797	0.852	Adjusted R^2	0.946	0.953
F statistic	16.792** [.001]	33.588** [.000]	F statistic	7.072* [0.013]	49.923** [.000]	F statistic	23.859** [0.004]	69.383** [.000]

[a] Multiple Regression , [b] Stepwise Regression,

* indicates significance at 5% level, ** indicates significance at 1% level ,
(t-statistics) , [p-value]

Table 6.3 continued								
Results of Multiple Regression of Transport Industry: 18 Companies								
Dependent variable: LTD/TA Ratio								
Column 4			Column 5			Column 6		
	Run 1[a]	Run 1[b]		Run2[a]	Run 2[b]		Run4[a]	Run4[b]
Intercept	0.194	0.015	Intercept	0.343	-0.230	Intercept	-0.305	-0.008
Log of sales	-0.001 (-0.046) [0.964]	Excluded	Log of TNA	0.005 (0.248) [0.813]	Excluded	Log of GTFA	0.008 (0.442) [0.677]	Excluded
PBT/TNA	-0.907 (-1.844) [0.115]	Excluded	PBT/TNA	-1.235 (-1.319) [0.235]	Excluded	PBITDA/TGA	-0.522 (-0.576) [0.589]	Excluded
NFA/TNA	0.459 (2.512)* [0.046]	0.560 (4.697)** [.000]	(Nfa+Inv+AR)/TNA	0.179 (0.563) [0.594]	0.495 (3.990)** [0.001]	GFA/TGA	0.640 [2.396]** [0.062]	0.448 (3.540)** [0.003]
COV of PBIT to TNA	0.016 (0.189) [0.857]	Excluded	COV of PBIT to TNA	-0.003 (-0.024) [0.981]	Excluded	SD of PBITDA	-2.043 (-1.160) [0.298]	Excluded
CAGR of TNA	0.614 (0.872) [0.417]	Excluded	CAGR of TNA	0.603 (0.558) [0.597]	Excluded	CAGR of sales	0.181 (0.292) [0.782]	Excluded
Log of age of firm	-0.035 (-0.974) [0.368]	Excluded	Log of age of firm	-0.037 (-0.631) [0.551]	Excluded	Log of age	-0.003 (-0.068) [0.949]	Excluded
Equity Div/PAT	-0.031 (-0.412) [0.695]	Excluded	Equity Div/PAT	-0.066 (-0.611) [0.564]	Excluded	Eq Div/PAT	0.232 (1.432) [0.212]	Excluded
CA/CL	0.023 (0.920) [0.393]	Excluded	CA/CL	0.001 (0.034) [0.974]	Excluded	CA/CL	0.010 (0.356) [0.736]	Excluded
Net exp/Sales	0.523 (2.225) [0.068]	0.470 (3.315)** [0.005]	Net exp/Sales	0.498 (1.087) [0.319]	Excluded	Net exp/Sales	0.594 (2.311) [0.069]	0.512 (3.078)** [0.008]
R&D/Sales	0.680 (0.235) [0.822]	Excluded	R&D/Sales	1.111 (0.230) [0.826]	Excluded	R&D/Sales	-9.024 (-1.533) [0.186]	Excluded
INT/DEBT	-0.324 (-0.346) [0.741]	Excluded	INT/DEBT	-0.689 (-0.470) [0.655]	Excluded	INT/DEBT	2.240 (1.369) [0.229]	Excluded
PBDIT/INT	---	---	PBDIT/INT	---	---	PBDIT/INT	0.001 (2.058) [0.095]	Excluded
R^2	0.865	0.670	R^2	0.737	0.499	R^2	0.843	0.556
Adjusted R^2	0.617	0.627	Adjusted R^2	0.256	0.467	Adjusted R^2	0.465	0.497
F statistic	3.495 [0.068]	15.258 [.000]	F statistic	1.532 [0.312]	15.922** [0.001]	F statistic	2.23 [0.193]	9.404** [0.002]
[a] Multiple Regression, [b] Stepwise Regression, * indicates significance at 5% level, ** indicates significance at 1% level, (t-statistics) , [p-value]								

Table 6.3 continued Results of Multiple Regression of Transport Industry: 18 Companies Dependent variable: TL/TA ratio								
Column 7			Column 8			Column 9		
	Run 1[a]	Run 1[b]		Run 2[a]	Run 2[b]		Run4[a]	Run4[b]
Intercept	0.954	0.099	Intercept	1.017	0.331	Intercept	1.299	0.804
Log of sales	-0.021 (-0.829) [0.439]	Excluded	Log of sales	-0.033 (-1.429) [0.203]	Excluded	Log of sales	-0.024 (-0.870) [0.424]	Excluded
PBT/TNA	-1.132 (-0.938) [0.385]	Excluded	PBT/TNA	-1.413 (-2.219) [0.068]	Excluded	PBT/TNA	-2.228 (-1.968) [0.106]	-1.154 (-2.524)* [0.023]
(Nfa+Inv+AR)/TNA	0.225 (0.548) [0.604]	0.573 (3.383)** [0.004]	INV/TNA	1.107 (1.505) [0.183]	1.281 (2.780)* [0.013]	NFA/TNA	-0.111 (-0.304) [0.774]	Excluded
COV of PBIT to TNA	-0.024 (-0.143) [0.891]	Excluded	COV of PBIT to TNA	-0.056 (-0.415) [0.693]	Excluded	COV of PBIT to TNA	-0.043 (-0.241) [0.819]	Excluded
CAGR of TNA	0.690 (0.530) [0.615]	Excluded	CAGR of TNA	1.182 (1.045) [0.336]	Excluded	CAGR of TNA	0.876 (0.637) [0.552]	Excluded
Log of age of firm	-0.050 (-0.657) [0.536]	Excluded	Log of age of firm	-0.060 (-0.992) [0.359]	Excluded	Log of age of firm	-0.028 (-0.395) [0.709]	Excluded
Equity Div/PAT	-0.141 (-1.011) [0.351]	Excluded	Equity Div/PAT	-0.105 (-0.851) [0.427]	Excluded	Equity Div/PAT	-0.239 (-1.234) [0.272]	-0.198 (-2.278)* [0.038]
CA/CL	-0.041 (-0.981) [0.364]	Excluded	CA/CL	-0.062 (-1.653) [0.149]	Excluded	CA/CL	-0.051 (-1.018) [0.355]	Excluded
Net exp/Sales	0.416 (0.697) [0.512]	Excluded	Net exp/Sales	0.174 (0.363) [0.729]	Excluded	Net exp/Sales	0.570 (1.077) [0.331]	Excluded
R&D/Sales	1.330 (0.215) [0.837]	Excluded	R&D/Sales	4.473 (0.795) [0.457]	Excluded	R&D/Sales	2.291 (0.279) [0.792]	Excluded
INT/DEBT	-0.173 (-0.092) [0.929]	Excluded	INT/DEBT	0.040 (0.027) [0.980]	Excluded	INT/DEBT	-0.415 (-0.201) [0.849]	Excluded
DIV/SC	---	---	DIV/SC	---	---	DIV/SC	1.038 (0.510) [0.632]	Excluded
R^2	**0.722**	**0.417**	**R^2**	**0.788**	**0.326**	**R^2**	**0.731**	**0.458**
Adjusted R^2	**0.211**	**0.381**	**Adjusted R^2**	**0.399**	**0.284**	**Adjusted R^2**	**0.087**	**0.386**
F statistic	**1.414 [0.349]**	**11.447** [0.004]**	**F statistic**	**2.025 [0.200]**	**7.729 [0.013]**	**F statistic**	**1.134 [0.478]**	**6.338** [0.010]**

[a] Multiple Regression , [b] Stepwise Regression,

* indicates significance at 5% level, ** indicates significance at 1% level ,

(t-statistics) , [p-value]

Liquidity as measured by CA/CL ratio in Transport industry has significant negative impact on TC&E/TA ratio indicating that greater liquid assets mean lower reliance on Trade Credits.

Dividend Payout indicator- Equity Div / PAT has significant negative impact on TC&E/TA ratio of Transport industry and the 't' statistic is significant at 1% level of significance. This result is different from the results obtained in Chemical industry where a positive impact of Dividend Payout is observed in TC&E/TA ratio. This indicates that in Transport industry as the Dividend Payout increases, the companies lower their preference for Short Term Trade Credit. This is an important finding, unique only to Transport industry but this confirms the fact that Transport FDI Companies do have built in cash reserves which they use when there are volatile profits or high Dividend Payouts and do not resort to Short Term Trade Credit under these circumstances.

The impact of indicators for **Size, Profitability, and Growth rate, Age, Net Exports/Sales, Uniqueness, Cost of Debt and Cost of Equity** is found insignificant on TC&E/TA ratio of companies in Transport industry.

6.4.3 Results of Multiple Regressions of LTD/TA Ratio for Transport industry

Out of the three regression runs reported in Table 6.3 on LTD/TA ratio of Transport industry, the value of R^2 is highest in Run 1^b: Column 4 and indicates that a maximum of 62.7% variations in LTD/TA ratio of Transport industry are explained by significant indicators selected in regression Run 1^b: Column 4. The significant determinants of LTD/TA ratio in Transport industry are **Collateral effect and Net Exports/ Sales.**

All the three indicators of **Collateral effect** – NFA/TNA, GFA/TGA and (Nfa+Inv+AR) / TNA have significant positive impact on LTD/TA ratio; the 't' statistic is significant at 1% level of significance confirming that in Transport industry existence of collaterals like fixed assets support more long term debt. Net Exports/Sales has significant positive impact on LTD/TA ratio for Transport industry and the 't' statistic is significant at 1% level of significance. This result contradicts the overall regression results of 140 sample FDI Companies where Net Exports/Sales had a significant negative impact on LTD/TA ratio of 140 Sample companies. The correlation matrix presented in Table 6.3.2 of selected explanatory variables for Debt Ratios indicate that

Net Exports/Sales ratio is highly correlated with Profitability indicators and the association is positive. This means that net exporter companies from Transport industry are also profitable companies who do not hesitate to borrow long term even though they have created enough reserves in the form of retained profits. At the same time, it is important to note that although Profitability indicator PBT/TNA and PBITDA/TGA do not enter the stepwise regression model as significant predictor of LTD/TA, the coefficient has negative sign in all regression runs. This indicates that Transport FDI Companies borrow more from long term sources when they are engaged in exports and although they must be getting tax concessions and other benefits, to meet export requirement, these companies must be requiring funds which are borrowed from long term sources.

The impact of indicators for **Size, Profitability, Growth rate, Age, Dividend Payout, Liquidity, Uniqueness, Cost of Debt and Debt Service Capacity** is found insignificant on LTD/TA ratio of companies in Transport industry.

6.4.4 Results of Multiple Regressions on TL/TA Ratio of Transport industry

The multiple regression runs conducted on TL/TA ratio resulted in lower R^2 as compared to regression runs on TC&E/TA and LTD/TA. The maximum value of R^2 is obtained in highest in Run 4^b: Column-9 and indicates that a maximum of 38.6% variations in TL/TA ratio are explained by significant indicators selected in Regression Run 4^b: Column 9. The significant determinants of TL/TA ratio in Transport industry are **Profitability, Collateral effect, and Dividend Payout.**

Profitability indicator PBT / TNA has significant negative impact on TL/TA ratio of Transport industry and the 't' statistic is significant at 5% level of significance. **Collateral indicator** (Nfa+Inv+AR)/TNA and INV/TNA have significant positive impact on TL/TA ratio. Since Total Liabilities include a substantial proportion of Short Term Debt, Inventories and Accounts Receivables act as Collaterals to obtain Short Term Debt in Transport Industry while tangible fixed assets might be being used to obtain long term finance and hence the positive association. **Dividend Payout** indicator Equity Div/PAT has significant negative impact on TL/TA ratio of Transport industry which means that FDI Companies from Transport industry generally lower their preference for debt when Dividend Payout increases. The impact of indicators for

Size, Volatility, Growth rate, Age, Liquidity, Net exports/Sales, Uniqueness and Cost of Debt is found insignificant on TL/TA ratio of companies in Transport industry.

Table 6.3.1				
Results of Mutiple Regressions in Transport Industry (18 FDI Companies)				
Dependent variables- Debt Ratios		TC&E/TA	LTD/TA	TL/TA
Independent Variables	Indicators			
Size	Log of sales	N.S	N.S	N.S
	Log of TNA	---	---	---
	Log of GTFA	---	---	---
Profitability	PBT/TNA	N.S	N.S	-VE**
	PBITDA/TGA	---	---	---
Collateral	NFA/TNA	-VE**	+VE**	N.S
	GFA/TGA	---	+VE**	---
	(Nfa+Inv+AR)/TA	---	+VE**	+VE**
	INV/TNA	+VE**	---	+VE**
Volatility	COV of PBIT/ TNA	-VE*	N.S	N.S
	SD of PBITDA/TGA	---	---	---
Growth rate	CAGR of TNA	N.S	N.S	N.S
	CAGR of sales	N.S	N.S	---
NDTS	Depr/TGA	---	---	---
Debt Service capacity	PBDIT/INT	---	N.S	---
Age	Log of age of firm	N.S	N.S	N.S
Dividend payout	Equity Div/PAT	-VE**	N.S	
Liquidity	CA/CL	-VE**	N.S	-VE*
Net Exports	Net exp/Sales	N.S	+VE**	N.S
Cost of Equity	DIV/SC	N.S	---	N.S
Uniqueness	R&D/Sales	N.S	N.S	N.S
Cost of Borrowing	INT/DEBT	N.S	N.S	N.S
* Indicates significance at 5% level, ** indicates significance at 1% level				
Not Significant=(NS), Positive= (+VE), Negative =(-VE)				
A Dash means -- the indicator is not included in final regression runs				

6.5 Conclusion: Industry-Wise Multiple Regressions

Frank & Goyal (2004)[5] had divided their sample firms into several classes – dividend paying verses non-dividend paying, mature firms verses young firms, small firms verses large firms and so on as they had put forth the apprehension that fitting a single model to companies in different situations would generate unstable results due to aggregation process. Keeping this viewpoint and to take care of this concern, in this study the sample of 140 FDI companies in India is divided into various industry groups and three major industry groups – Chemicals, Machinery and Transport industry are selected to examine whether there exists any variation in Determinants of Capital Structure, if sample FDI Companies are divided on the basis of their affiliation to a particular industry.

Industry-Wise Multiple Regression Results, Industry-Wise Correlation Matrix, Variance Inflationary Factors for each reported multiple regression run of each industry and the summary of results of all the regression runs conducted on each selected measure of debt of each industry are presented in the chapter. The main conclusions derived from the results of multiple regressions conducted between various independent variables with each Debt Ratio (dependent variable) of the selected industry groups are as follows:

1. At Industry-wise analysis of Determinants of Capital Structure, the study rejects the null hypotheses that there is no significant impact of Size of a company, Profitability of a company, Collateral value of assets, Volatility of companies' earnings, existence of Non Debt Tax Shields, Age of a company, Dividend Payout, Liquidity, Net Exports, Cost of Borrowings, Cost of Equity and Uniqueness of a company on a company's Debt Ratios. The study accepts the alternative hypotheses that all the above mentioned determinants have significant impact on Debt Ratios of FDI Companies from three major industry groups – Chemical, Machinery and Transport industry.

2. At Industry-wise analysis of Determinants of Capital Structure, the study accepts the null hypotheses that there is no significant impact of Growth rate of a company and Debt Service Capacity of a company on Debt Ratios as these determinants were not a significant predictor in multiple regressions conducted on various Debt Ratios of the selected industry groups.

3. It is observed that although most of the Determinants of Capital Structure have consistently the same impact on the Debt Ratios even in industry wise classification as they had on the overall sample, some determinants which did not seem to have impact on overall sample become significant when companies are categorized into various industries.

4. In Chemical industry, the highest R^2 of .708 is found in multiple regressions on LTD/TA ratio indicating that **70.8% variations in LTD/TA ratio** are explained by significant indicators selected in Run 2: Column-6, Table 6.1. In case of Machinery industry, the highest R^2 of .840 is found in multiple regressions on TC&E/TA ratio indicating that **84% variations in TC&E/TA ratio** are explained by significant indicators selected in Run 7: Column-3, Table 6.2. In case of Transport industry, highest R^2 of .953 is found in multiple regressions on TC&E/TA ratio indicating that **95.3% variations in TC&E/TA** ratio are explained by significant indicators selected in Run 9: Column-3.

5. **Size** as measured by Log of sales has positive impact on TC&E/TA ratio of Chemical industry only. The results indicate that in Chemical industry large Size firms in terms of greater sales mean greater reliance on Trade Credits. Increase in sales means increased manufacturing activity which increases the need of short term working capital requirements and leads to greater reliance on Trade Credits. For other two industries, it is not a significant predictor.

6. **Profitability** indicator has consistently the same negative sign in all the regression runs of all the three industries confirming that even industry-wise classification proves that FDI Companies do follow Pecking Order Theory.

7. **Collateral** indicators measured in terms of fixed assets like NFA/TNA and GFA/TGA has significant negative impact on Short Term Debt Ratios in all the three industries and at the same time these indicators have positive impact on Long Term Debt Ratios in all the three industries. **Collateral** indicator INV/TNA has significant positive impact on Transport industry only and Collateral indicator Nfa+Inv+AR/TNA has significant positive impact on LTD/TA ratio of Transport industry and on TL/TA ratio of Machinery and Transport industry. These results are in confirmation with the results obtained with respect to overall sample of 140 FDI Companies. The results indicate that Collaterals in the form of tangible fixed assets support Long Term Debt in all the industries. Inventories and Accounts receivables support more of Short Term Debt.

8. **Volatility** of earnings has significant positive impact on the debt ratios except in case of Transport industry where the indicator of **Volatility** has negative

impact on TC&E/TA ratio. This shows that FDI Companies from Transport industry adopt a conservative approach when there are volatile earnings.

9. **Growth rate** has no significant impact on any Debt Ratios, in any of the industries.

10. **Non Debt Tax Shields** have significant negative impact on Long Term Debt ratio of Machinery industry only indicating that in case of Machinery industry, greater tax shields would mean lower debt levels in the industry.

11. **Debt Service Capacity** has no significant impact on any Debt Ratio in any of the industries.

12. **Age** has significant positive impact on TC&E/TA ratio of Chemical industry and significant negative impact LTD/TA ratio of Chemical industry only although its coefficient entered in all regression models in other industries with same sign as indicated in overall regression results. The results indicate that in case of chemical industry mature FDI Companies tend to borrow more from trade credits and equivalents and prefer to keep their Long Term Debt levels low.

13. Even when the **Dividend Payout** is high, Transport industry and Chemical industry provide variations in results. In Transport industry Dividend Payout has significant negative impact on TC&E/TA ratio whereas in Chemical industry, Dividend payout has significant positive impact on TC&E/TA ratio. This indicates that Chemical industry FDI Companies borrow more of Short Term Trade Credit when Dividend Payout is high.

14. **Liquidity** has consistently the same negative impact on Short Term Debt ratios in all the three industries. Liquidity has no significant impact on Long Term Debt ratios. The results indicate that greater the liquidity, lower will be the Short Term Debt ratios in each industry.

15. **Net Exports** have significant negative impact on Long Term Debt Ratio of Chemical and Machinery industry but has a significant positive impact on Transport industry. Generally net exporters avail lot of tax concessions and other benefits from the government, hence the incentive to obtain Long Term

Debt for its benefit of tax deductibility is not there. Hence, net exporters in Chemical and Machinery industry have a significant negative impact on Long Term Debt Ratio. At the same time, Net Exports has significant positive impact on LTD/TA ratio of Transport industry which indicates that it is a unique feature peculiar to this particular industry. It might be possible that those companies who are net exporters in Transport industry require huge investments in assets and hence need more funds to finance these assets, which they borrow from long term sources.

16. **Cost of Borrowing** has significant negative impact on Long Term Debt Ratio of Chemical industry only, indicating that in Chemical industry, as the Cost of Borrowings rise, companies prefer to borrow less from Long Term Debt funds. Cost of Borrowing has insignificant impact on Short Term and Total Debt ratios of all the three industries.

17. **Uniqueness** have significant negative impact on Long Term Debt ratio of Chemical industry only indicating that unique FDI Companies in Chemical industry would borrow less from Long Term Debt sources. It might also be possible that these unique firms might be facing difficulty in borrowing from Long Term Debt sources.

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Table 6.1.2 (page 1)

Pearsons Correlations Matrix of Explanatory Variables for Debt ratios (Chemicals Industry:37 Companies)

Variables	Log of sales	Log of GTFA	Log of TNA	PBITDA/TGA	PBT/TNA	NFA/TNA	GFA/TGA	(Nfa+Inv+AR)/TNA	INV/TNA	SD of PBITDA/TGA	COV of PBIT/TNA
Log of sales	1										
Log of GTFA	.865(**)	1									
Log of TNA	.969(**)	.928(**)	1								
PBITDA/TGA	.413(*)	0.183	.341(*)	1							
PBT/TNA	.446(**)	0.207	.377(*)	.979(**)	1						
NFA/TNA	-.384(*)	0.068	-0.269	-.399(*)	-.464(**)	1					
GFA/TGA	-.385(*)	0.072	-0.287	-.442(**)	-.496(**)	.967(**)	1				
(Nfa+Inv+AR)/TNA	-.379(*)	-0.24	-.391(*)	-.662(**)	-.712(**)	.413(*)	.427(**)	1			
INV/TNA	.333(*)	-0.024	0.241	0.301	0.323	-.666(**)	-.712(**)	-0.078	1		
SD of PBITDA/TGA	-0.148	-0.307	-0.206	0.236	0.28	-0.152	-0.186	-.432(**)	-0.06	1	
COV of PBIT/TNA	-.459(**)	-.376(*)	-.439(**)	-.594(**)	-.541(**)	0.207	0.217	0.202	-0.208	.539(**)	1
CAGR of TNA	0.128	0.181	0.253	0.155	0.144	-0.088	-0.191	-0.232	0.214	-0.243	-.333(*)
CAGR of sales	-0.006	0.086	0.051	-0.045	-0.113	0.133	0.047	0.185	0.094	-.423(**)	-0.315
Depr/TGA	-0.178	0.102	-0.152	-0.077	-0.157	.596(**)	.689(**)	0.03	-.591(**)	-0.112	-0.11
PBDIT/INT	0.123	0.014	0.109	.327(*)	.339(*)	-0.161	-0.165	-.332(*)	0.075	0.204	-0.135
Log of age	.571(**)	.370(*)	.517(**)	0.165	0.27	-.521(**)	-.485(**)	-0.263	.418(**)	0.033	-0.117
Eq Div/PAT	.387(*)	0.196	0.316	.394(*)	.405(*)	-.462(**)	-.419(**)	-.431(**)	0.176	0.052	-.331(*)
CA/CL	-.366(*)	-0.213	-0.269	-0.134	-0.055	0.18	0.158	-0.162	-0.191	0.207	.335(*)
Net exp/Sales	-.334(*)	-0.173	-0.272	-0.119	-0.059	0.236	0.24	-0.118	-0.217	0.268	.414(*)
DIV/SC	.561(**)	.388(*)	.496(**)	.758(**)	.765(**)	-0.31	-.353(*)	-.558(**)	0.184	0.205	-.426(**)
R&D/Sales	0.046	0.004	0.081	0.125	0.168	-0.2	-0.191	-0.184	-0.045	-0.099	-0.275
INT/DEBT	0.021	-0.179	-0.023	0.227	0.231	-.428(**)	-.442(**)	-0.064	.506(**)	-0.074	-0.211

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6.1.2 Continued: (page 2)

Pearsons Correlations Matrix of Explanatory Variables for Debt ratios (Chemicals Industry:37 Companies)

Variables	CAGR of TNA	CAGR of sales	Depr/TGA	PBDIT/INT	Log of age	Eq Div/PAT	CA/CL	Net exp/Sales	DIV/SC	R&D/Sales	INT/DEBT
Log of sales											
Log of GTFA											
Log of TNA											
PBITDA/TGA											
PBT/TNA											
NFA/TNA											
GFA/TGA											
(Nfa+Inv+AR)/TNA											
Inv/TNA											
SD of PBITDA/TGA											
COV of PBIT/TNA											
CAGR of TNA	1										
CAGR of sales	.723(**)	1									
Depr/TGA	-0.117	0.022	1								
PBDIT/INT	0.107	-0.149	-0.023	1							
Log of age	-0.028	-0.272	-.353(*)	0.111	1						
Eq Div/PAT	0.179	0.07	-0.023	0.144	0.075	1					
CA/CL	0.069	-0.117	-0.027	-0.055	-0.055	-0.175	1				
Net exp/Sales	0.009	0.006	0.043	-0.041	-0.019	-0.123	.651(**)	1			
DIV/SC	0.059	0.006	-0.149	0.186	0.257	.439(**)	-0.299	-0.137	1		
R&D/Sales	0.272	0.085	-0.118	.382(*)	0.042	0.064	-0.025	0.02	-0.073	1	
INT/DEBT	0.11	-0.009	-.336(*)	0.085	0.079	0.113	-0.216	-0.268	0.126	-0.052	1

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6.1.3															
Variance Inflationary Factors of Stepwise Multiple Regressions of Chemical Industry (37 FDI Companies)															
STD1/TA ratio		TC&E/TA ratio				LTD/TA ratio					TL/TA ratio				
Variables	Run2[b]	Variables	Run 1[b]	Run 2[b]	Run5[b]	Variables	Run 1[b]	Run2[b]	Run4[b]	Run5[b]	Variables	Run 1[b]	Run 4[b]		
Log of sales	----	Log of sales	1.642	----	----	Log of sales	----	----	----	----	Log of sales	----	----		
Log of GTFA	----	Log of GTFA	----	----	----	Log of GTFA	----	----	----	----	Log of GTFA	----	----		
Log of TNA	----	Log of TNA	----	----	----	Log of TNA	----	----	----	----	Log of TNA	----	----		
PBITDA/TGA	----	PBITDA/TGA	----	----	----	PBITDA/TGA	----	----	1.243	----	PBITDA/TGA	----	----		
PBT/TNA	----	PBT/TNA	----	----	----	PBT/TNA	1.279	1.375	----	----	PBT/TNA	1.003	2.627		
NFA/TNA	1.033	NFA/TNA	1.491	----	----	NFA/TNA	1.350	----	----	1.076	NFA/TNA	----	----		
GFA/TGA	----	GFA/TGA	----	----	1.026	GFA/TGA	----	----	1.3	----	GFA/TGA	----	----		
(Nfa+Inv+AR)/TNA	----	(Nfa+Inv+AR)/TNA	----	----	----	(Nfa+Inv+AR)/TNA	----	----	----	----	(Nfa+Inv+AR)/TNA	----	----		
INV/TNA	----	INV/TNA	----	----	----	INV/TNA	----	----	----	----	INV/TNA	----	----		
SD of PBITDA	----	SD of PBITDA	----	----	----	SD of PBITDA	----	----	----	----	SD of PBITDA	----	----		
COV of PBIT/TNA	----	COV of PBIT/TNA	1.377	----	----	COV of PBIT/TNA	----	----	----	1.225	COV of PBIT/TNA	----	----		
CAGR of TNA	----	CAGR of TNA	----	----	----	CAGR of TNA	----	----	----	----	CAGR of TNA	----	----		
CAGR of sales	----	CAGR of sales	----	----	----	CAGR of sales	----	----	----	----	CAGR of sales	----	----		
Depr/TGA	----	Depr/TGA	----	----	----	Depr/TGA	----	----	----	----	Depr/TGA	----	----		
PBDIT/INT	----	PBDIT/INT	----	----	----	PBDIT/INT	----	----	----	----	PBDIT/INT	----	----		
Log of age	----	Log of age	----	1.008	----	Log of age	----	1.080	----	----	Log of age	----	----		
Eq Div/PAT	----	Eq Div/PAT	----	1.036	----	Eq Div/PAT	----	1.213	----	----	Eq Div/PAT	----	----		
CA/CL	1.033	CA/CL	1.251	1.033	1.026	CA/CL	----	----	----	----	CA/CL	1.003	1.194		
Net exp/Sales	----	Net exp/Sales	----	----	----	Net exp/Sales	1.063	1.09	1.061	1.242	Net exp/Sales	----	----		
DIV/SC	----	DIV/SC	----	----	----	DIV/SC	----	----	----	----	DIV/SC	----	2.876		
R&D/Sales	----	R&D/Sales	----	----	----	R&D/Sales	----	1.038	----	----	R&D/Sales	----	----		
INT/DEBT	----	INT/DEBT	1.385	----	----	INT/DEBT	----	----	----	----	INT/DEBT	----	----		

Table 6.1.4					
Final Regression runs on Debt ratio:STD1/TA of Chemicals Industry [Stepwise Regression results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA
------	PBT/TNA	------	PBT/TNA	PBT/TNA	PBT/TNA
NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)
------	------	INV/TNA	------	INV/TNA	INV/TNA
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
DIV/SC	------	DIV/SC	DIV/SC	DIV/SC	DIV/SC
R sq =.610	**R sq =.610**	**R sq =.610**	**R sq =.610**	**R sq =.610**	**R sq =.610**
Adj R sq=.587	**Adj R sq=.587**	**Adj R sq=.587**	**Adj R sq=.587**	**Adj R sq=.587**	**Adj R sq=.587**

Table 6.1.5								
Final Regression runs on Debt ratio:TC&E/TA of Chemicals Industry [Stepwise Regression results]								
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**	**Run7**	**Run8**	**Run9**
Log of sales(+)	Log of sales	Log of sales	Log of TNA	Log of GTFA	Log of sales(+)	Log of GTFA	Log of sales(+)	Log of sales(+)
PBT/TNA	PBT/TNA	PBT/TNA	PBT/TNA	PBITDA/TGA	------	PBITDA/TGA	PBT/TNA	PBT/TNA
NFA/TNA(-)	(Nfa+Inv+AR)/TNA	------	NFA/TNA(-)	GFA/TGA(-)	NFA/TNA(-)	GFA/TGA(-)	NFA/TNA(-)	NFA/TNA(-)
COV PBIT/TNA(+)	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	SD of PBITDA/TGA	COV PBIT/TNA(+)	SD of PBITDA/TGA	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of sales
Log of age	Log of age(+)	Log of age(+)	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT(+)	Eq Div/PAT(+)	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT(+)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT(+)	INT/DEBT	INT/DEBT(+)	INT/DEBT(+)
------	------	------	------	------	DIV/SC	DIV/SC	DIV/SC	DIV/SC
------	------	------	------	------	------	Depr/TGA	------	------
------	------	------	------	PBDIT/INT	------	PBDIT/INT	------	------
------	------	INV/TNA	------	------	------	------	------	INV/TNA
R sq= .747	R sq =.623	R sq =.623	R sq= .580	R sq =.596	R sq= .747	R sq =.596	R sq= .747	R sq= .747
Adj R sq= .706	Adj R sq= .589	Adj R sq= .589	Adj R sq= .556	Adj R sq=.572	Adj R sq= .706	Adj R sq=.572	Adj R sq= .706	Adj R sq= .706

Table 6.1.6					
Final Regression runs on Debt ratio: LTD/TA of Chemical Industry [Stepwise Regression results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of TNA	Log of TNA	Log of GTFA	Log of TNA	Log of GTFA
PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBITDA/TGA(-)	------	PBITDA/TGA(-)
NFA/TNA(+)	(Nfa+Inv+AR)/TNA	NFA/TNA(+)	GFA/TGA(+)	NFA/TNA(+)	GFA/TGA(+)
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	SD of PBITDA/TGA	COV PBIT/TNA(+)	SD of PBITDA/TGA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of sales
Log of age	Log of age (-)	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT(-)	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales(-)	Net exp/Sales(-)	Net exp/Sales(-)	Net exp/Sales(-)	Net exp/Sales(-)	Net exp/Sales(-)
R&D/Sales	R&D/Sales(-)	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT(-)	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	------	DIV/SC	DIV/SC
------	------	------	------	------	Depr/TGA
------	------	------	PBDIT/INT	------	PBDIT/INT
R sq= .705	**R sq= .757**	**R sq= .705**	**R sq=.596**	**R sq= .676**	**R sq=.596**
Adj R Sq = .679	**Adj R Sq = .708**	**Adj R Sq = .679**	**Adj R Sq = .560**	**Adj R Sq = .560**	**Adj R Sq = .560**

Table 6.1.7					
Final Regression runs on Debt ratio:TL/TA of Chemicals Industry [Stepwise Regression results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of sales	Log of sales	Log of sales	Log of sales	Log of sales
PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)
(Nfa+Inv+AR)/TNA	INV/TNA	INV/TNA	NFA/TNA	(Nfa+Inv+AR)/TNA	INV/TNA
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	DIV/SC(+)	DIV/SC(+)	DIV/SC(+)
R sq =.607	**R sq =.607**	**R sq =.607**	**R sq =.672**	**R sq =.672**	**R sq =.672**
Adj R sq=.584	**Adj R sq=.584**	**Adj R sq=.584**	**Adj R sq=.642**	**Adj R sq=.642**	**Adj R sq=.642**

Table No. 6.2.2(page 1)

Pearsons Correlations Matrix of explanatory Variables for debt ratios (Machinery Industry:38 Companies)

Variables	Log of sales	Log of GTFA	Log of TNA	PBITDA/TGA	PBT/TNA	NFA/TNA	GFA/TGA	(Nfa+Inv+AR)/TNA	INV/TNA	SD of PBITDA/TGA	COV of PBIT/TNA
Log of sales	1										
Log of GTFA	.921(**)	1									
Log of TNA	.983(**)	.930(**)	1								
PBITDA/TGA	0.079	0.073	0.129	1							
PBT/TNA	0.079	0.077	0.134	.946(**)	1						
NFA/TNA	-0.043	0.283	-0.052	-0.034	-0.092	1					
GFA/TGA	-0.117	0.234	-0.129	-0.124	-0.134	.950(**)	1				
(Nfa+Inv+AR)/TNA	0.295	0.251	0.239	-0.268	-.448(**)	0.004	-0.013	1			
INV/TNA	0.147	0.14	0.129	-0.231	-.335(*)	-0.096	-0.039	.513(**)	1		
SD of PBITDA/TGA	-0.128	-0.261	-0.172	-0.219	-.325(*)	-0.181	-0.191	0.074	.359(*)	1	
COV of PBIT/TNA	-0.003	-0.059	-0.052	-.598(**)	-.647(**)	0	0.008	0.156	.328(*)	.742(**)	1
CAGR of TNA	0.284	0.235	.354(*)	.583(**)	.565(**)	-0.114	-0.252	-0.154	-.495(**)	-.385(*)	-.460(**)
CAGR of sales	0.249	0.179	0.259	.374(*)	.361(*)	-0.023	-0.148	-0.025	-.513(**)	-.324(*)	-.347(*)
Depr/TGA	-0.146	0.121	-0.17	-0.031	0.013	.701(**)	.762(**)	-0.115	-0.246	-.401(*)	-0.163
PBDIT/INT	0.066	0.062	0.095	.510(**)	.561(**)	0.024	-0.017	-.381(*)	-.470(**)	-0.169	-0.282
Log of age	.521(**)	.505(**)	.554(**)	0.185	0.234	-0.182	-0.138	0.198	0.293	-0.087	-0.051
Eq Div/PAT	0.116	0.154	0.112	.368(*)	.399(*)	0.242	0.161	-0.15	-0.18	-0.14	-.385(*)
CA/CL	-.392(*)	-0.236	-.321(*)	.367(*)	.413(**)	0.12	0.206	-.365(*)	-0.308	-0.194	-0.267
Net exp/Sales	0.148	0.212	0.182	0.093	0.207	0.134	0.184	-0.3	-0.077	0.164	0.123
DIV/SC	0.074	0.06	0.115	.651(**)	.689(**)	-0.04	-0.128	-.501(**)	-.331(*)	-0.047	-.367(*)
R&D/Sales	0.271	0.165	0.293	0.055	0.128	-0.214	-0.25	-0.063	-0.166	-0.105	-0.007
INT/DEBT	0.293	0.152	0.254	-0.089	-0.09	-0.268	-0.269	0.075	0.138	0.192	0.041

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table No. 6.2.2 Continued: (page 2)

Pearsons Correlations Matrix of explanatory Variables for debt ratios (Machinery Industry:38 Companies)

Variables	CAGR of TNA	CAGR of sales	Depr/TGA	PBDIT/INT	Log of age	Eq Div/PAT	CA/CL	Net exp/Sales	DIV/SC	R&D/Sales	INT/DEBT
Log of sales											
Log of GTFA											
Log of TNA											
PBITDA/TGA											
PBT/TNA											
NFA/TNA											
GFA/TGA											
(Nfa+Inv+AR)/TNA											
INV/TNA											
SD of PBITDA/TGA											
COV of PBIT/TNA											
CAGR of TNA	1										
CAGR of sales	.826(**)	1									
Depr/TGA	-0.032	0.149	1								
PBDIT/INT	0.293	0.25	0.067	1							
Log of age	0.086	-0.102	-0.256	0.184	1						
Eq Div/PAT	0.146	0.048	0.166	0.262	0.206	1					
CA/CL	0.118	-0.046	0.222	0.112	-0.084	0.066	1				
Net exp/Sales	0.126	0.085	-0.027	0.276	.367(*)	0.168	0.045	1			
DIV/SC	.482(**)	.382(*)	-0.006	.403(*)	0.093	.401(*)	0.099	.329(*)	1		
R&D/Sales	0.272	0.225	-0.189	.382(*)	.376(*)	0.187	-0.176	0.293	0.083	1	
INT/DEBT	-0.282	-.328(*)	-.354(*)	0.049	0.301	-0.005	-.368(*)	-0.089	-0.171	0.128	1

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6.2.3

Variance Inflationary Factors of Stepwise Multiple Regressions of Machinery industry (38 FDI Companies)

STD1/TA ratio		TC&E/TA ratio			LTD/TA ratio					TL/TA ratio		
Variables	Run6^b	Variables	Run 1^b	Run7^b	Variables	Run 1^b	Run4^b	Run5^b	Run6^b	Variables	Run 1^b	Run 2^b
Log of sales	----	Log of sales	----	----	Log of sales	----	----	----	----	Log of sales	----	----
Log of GTFA	----	Log of GTFA	----	----	Log of GTFA	----	----	----	----	Log of GTFA	----	----
Log of TNA	----	Log of TNA	----	----	Log of TNA	----	----	----	----	Log of TNA	----	----
PBITDA/TGA	----	PBITDA/TGA	----	1.266	PBITDA/TGA	----	1.119	----	----	PBITDA/TGA	----	----
PBT/TNA	----	PBT/TNA	----	----	PBT/TNA	1.009	----	----	----	PBT/TNA	----	1.721
NFA/TNA	1.016	NFA/TNA	1.016	----	NFA/TNA	1.009	----	1.019	----	NFA/TNA	----	----
GFA/TGA	----	GFA/TGA	----	1.143	GFA/TGA	----	1.142	----	----	GFA/TGA	----	----
(Nfa+Inv+AR)/TNA	----	(Nfa+Inv+AR)/TNA	----	----	(Nfa+Inv+AR)/TNA	----	----	----	----	(Nfa+Inv+AR)/TNA	----	----
INV/TNA	----	INV/TNA	----	----	INV/TNA	----	----	----	----	INV/TNA	1.025	----
SD of PBITDA/TGA	----	SD of PBITDA/TGA	----	1.111	SD of PBITDA/TGA	----	1.177	----	----	SD of PBITDA/TGA	----	----
COV of PBIT/TNA	1.078	COV of PBIT/TNA	1.078	----	COV of PBIT/TNA	----	----	1.016	----	COV of PBIT/TNA	1.025	1.721
CAGR of TNA	----	CAGR of TNA	----	----	CAGR of TNA	----	----	----	----	CAGR of TNA	----	----
CAGR of sales	----	CAGR of sales	----	----	CAGR of sales	----	----	----	----	CAGR of sales	----	----
Depr/TGA	----	Depr/TGA	----	----	Depr/TGA	----	----	----	----	Depr/TGA	----	----
PBDIT/INT	----	PBDIT/INT	----	----	PBDIT/INT	----	----	----	----	PBDIT/INT	----	----
Log of age	----	Log of age	----	----	Log of age	----	----	----	----	Log of age	----	----
Eq Div/PAT	----	Eq Div/PAT	----	----	Eq Div/PAT	----	----	----	----	Eq Div/PAT	----	----
CA/CL	1.094	CA/CL	1.094	1.254	CA/CL	----	----	----	----	CA/CL	----	----
Net exp/Sales	----	Net exp/Sales	----	----	Net exp/Sales	----	1.117	1.034	----	Net exp/Sales	----	----
DIV/SC	----	DIV/SC	----	----	DIV/SC	----	----	----	----	DIV/SC	----	----
R&D/Sales	----	R&D/Sales	----	----	R&D/Sales	----	----	----	----	R&D/Sales	----	----
INT/DEBT	----	INT/DEBT	----	----	INT/DEBT	----	----	----	----	INT/DEBT	----	----

Table 6.2.4

Final Regression runs on Debt ratio:STD1/TA (Machinery Industry:38 companies) [Stepwise Regession results]

Run1	Run2	Run3	Run4	Run5	Run6
Log of sales	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA
------	PBT/TNA	------	PBT/TNA	PBT/TNA	PBT/TNA
NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)	NFA/TNA(-)
------	------	INV/TNA	------	INV/TNA	INV/TNA
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
DIV/SC	------	DIV/SC	DIV/SC	DIV/SC	DIV/SC
R sq =0.651	**R sq =0.651**	**R sq =0.651**	**R sq =0.651**	**R sq =0.651**	**R sq =0.651**
Adj R sq=.620	**Adj R sq=.620**	**Adj R sq=.620**	**Adj R sq=.620**	**Adj R sq=.620**	**Adj R sq=.620**

Table 6.2.5

Final Regression runs on Debt ratio:TC&E/TA (Machinery Industry:38 companies) [Stepwise Regession results]

Run1	Run2	Run3	Run4	Run5	Run6	Run7	Run8	Run9
Log of sales	Log of sales	Log of sales	Log of TNA	Log of GTFA	Log of sales	Log of GTFA	Log of sales	Log of sales
PBT/TNA	PBT/TNA	PBT/TNA	PBT/TNA	PBITDA/TGA(-)	------	PBITDA/TGA(-)	PBT/TNA	PBT/TNA
NFA/TNA(-)	(Nfa+Inv+AR)/TNA	------	NFA/TNA(-)	GFA/TGA(-)	NFA/TNA(-)	GFA/TGA(-)	NFA/TNA(-)	NFA/TNA(-)
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	SD of PBITDA/TGA(-)	COV PBIT/TNA(+)	SD of PBITDA/TGA(-)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	------	------	DIV/SC	DIV/SC	DIV/SC	DIV/SC
------	------	------	------	------	------	Depr/TGA	------	------
------	------	------	------	PBDIT/INT	------	PBDIT/INT	------	------
------	------	INV/TNA	------	------	------	------	------	INV/TNA
R sq= .784	**R sq =0.640**	**R sq =0.640**	**R sq= .784**	**R sq =.857**	**R sq= .784**	**R sq =.857**	**R sq= .784**	**R sq= .784**
Adj R sq= .765	**Adj R sq=.619**	**Adj R sq=.619**	**Adj R sq= .765**	**Adj R sq=.840**	**Adj R sq= .765**	**Adj R sq=.840**	**Adj R sq= .765**	**Adj R sq= .765**

Table 6.2.6					
Final Regression runs on Debt ratio:LTD/TA (Machinery Industry:38 companies) [Stepwise Regession results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of TNA	Log of TNA	Log of GTFA	Log of TNA	Log of GTFA
PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBITDA/TGA(-)	------	PBITDA/TGA(-)
NFA/TNA(+)	(Nfa+Inv+AR)/TNA	NFA/TNA(+)	GFA/TGA(+)	NFA/TNA(+)	GFA/TGA(+)
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	SD of PBITDA/TGA(+)	COV PBIT/TNA(+)	SD of PBITDA/TGA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales(-)	Net exp/Sales(-)	Net exp/Sales(-)
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	------	DIV/SC	DIV/SC
------	------	------	------	------	Depr/TGA(-)
------	------	------	PBDIT/INT	------	PBDIT/INT
R sq= .497	**R sq =0.352**	**R sq= .497**	**R sq =.53**	**R sq =.529**	**R sq =.585**
Adj R Sq = .468	**Adj R sq=.334**	**Adj R Sq = .468**	**Adj R sq=.473**	**Adj R sq=.487**	**Adj R sq=.535**

Table 6.2.7					
Final Regression runs on Debt ratio:TL/TA (Machinery Industry:38 companies) [Stepwise Regession results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of sales	Log of sales	Log of sales	Log of sales	Log of sales
PBT/TNA	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA(-)	PBT/TNA	PBT/TNA(-)
(Nfa+Inv+AR)/TNA(+)	INV/TNA	INV/TNA	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA
COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)	COV PBIT/TNA(+)
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	DIV/SC	DIV/SC	DIV/SC
R sq =0.635	**R sq =0.631**	**R sq =0.631**	**R sq =0.631**	**R sq =0.635**	**R sq =0.631**
Adj R sq=.614	**Adj R sq=.610**	**Adj R sq=.610**	**Adj R sq=.610**	**Adj R sq=.614**	**Adj R sq=.610**

Table 6.3.2 (page 1)

Pearsons Correlations Matrix of Explanatory Variables for Debt ratios (Transport Industry:18 Companies)

Variables	Log of sales	Log of GTFA	Log of TNA	PBITDA/TGA	PBT/TNA	NFA/TNA	GFA/TGA	(Nfa+Inv+AR)/TNA	INV/TNA	SD of PBITDA/TGA	COV of PBIT/TNA
Log of sales	1										
Log of GTFA	.966(**)	1									
Log of TNA	.980(**)	.970(**)	1								
PBITDA/TGA	0.264	0.114	0.229	1							
PBT/TNA	0.216	0.059	0.181	.983(**)	1						
NFA/TNA	0.337	0.463	0.287	-0.271	-0.379	1					
GFA/TGA	0.349	.496(*)	0.282	-0.293	-0.348	.883(**)	1				
(Nfa+Inv+AR)/TNA	-0.044	0.084	-0.065	-.592(**)	-.628(**)	.659(**)	.554(*)	1			
INV/TNA	-0.113	-0.104	-0.122	-0.407	-0.345	-0.049	-0.01	.599(**)	1		
SD of PBITDA/TGA	-0.006	-0.16	-0.014	.572(*)	.595(**)	-0.4	-.472(*)	-.567(*)	-0.173	1	
COV of PBIT/TNA	-0.177	-0.139	-0.168	-0.331	-0.298	0.055	0.099	0.112	0.253	0.434	1
CAGR of TNA	.502(*)	0.458	.471(*)	.602(**)	.540(*)	0.211	0.205	-0.079	-0.282	-0.023	-0.36
CAGR of sales	.484(*)	0.423	0.392	0.405	0.343	0.417	0.378	0.169	-0.162	-0.068	-0.319
Depr/TGA	0.46	.550(*)	0.418	0.102	0.087	0.377	.680(**)	-0.01	-0.302	-0.355	-0.254
PBDIT/INT	0.243	0.287	0.276	-0.168	-0.118	0.12	0.121	0.196	0.04	-0.285	-0.16
Log of age	-0.081	-0.146	-0.055	0.054	0.088	-0.297	-0.374	-0.311	-0.309	0.376	0.014
Eq Div/PAT	-.577(*)	-.550(*)	-.536(*)	-0.168	-0.101	-0.427	-0.385	0.023	0.206	-0.226	-0.242
CA/CL	-0.109	-0.052	-0.02	-0.117	-0.108	-0.089	-0.173	0.264	.526(*)	0.109	0.231
Net exp/Sales	0.175	-0.03	0.104	.698(**)	.695(**)	-0.272	-0.349	-0.461	-0.202	.585(*)	-0.173
DIV/SC	0.264	0.345	0.354	0.138	0.184	-0.141	0.002	-0.255	-0.298	-0.102	-0.279
R&D/Sales	-0.065	0.018	0.03	-.486(*)	-.498(*)	0.048	-0.081	0.28	0.413	-0.141	0.195
INT/DEBT	-0.027	-0.115	-0.033	.723(**)	.739(**)	-0.388	-0.316	-.615(**)	-.471(*)	0.415	-0.136

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6.3.2 Continued: (page 2)

Pearsons Correlations Matrix of Explanatory Variables for Debt ratios (Transport Industry:18 Companies)

Variables	CAGR of TNA	CAGR of sales	Depr/TGA	PBDIT/INT	Log of age	Eq Div/PAT	CA/CL	Net exp/Sales	DIV/SC	R&D/Sales	INT/DEBT
Log of sales											
Log of GTFA											
Log of TNA											
PBITDA/TGA											
PBT/TNA											
NFA/TNA											
GFA/TGA											
(Nfa+Inv+AR)/TNA											
INV/TNA											
SD of PBITDA/TGA											
COV of PBIT/TNA											
CAGR of TNA	1										
CAGR of sales	.781(**)	1									
Depr/TGA	0.445	.473(*)	1								
PBDIT/INT	0.03	-0.148	0.03	1							
Log of age	-0.254	-0.142	-0.229	0.073	1						
Eq Div/PAT	-0.301	-0.428	-0.334	0.062	0.08	1					
CA/CL	-0.395	-.486(*)	-0.417	-0.014	-0.019	0.138	1				
Net exp/Sales	0.424	0.378	-0.146	-0.21	0.397	-0.146	-0.187	1			
DIV/SC	0.013	-0.233	0.322	0.414	0.341	0.084	0.25	-0.121	1		
R&D/Sales	-.587(*)	-.604(**)	-0.361	0.166	-0.243	0.014	.612(**)	-.608(**)	0.014	1	
INT/DEBT	.497(*)	0.248	0.068	-0.246	0.028	0.116	-0.246	.525(*)	0.14	-.672(**)	1

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6.3.3

Variance Inflationary Factors of Stepwise Multiple Regressions of Transport Industry (18 FDI Companies)

TC&E/TA ratio				LTD/TA ratio				TL/TA ratio			
Variables	Run 1^b	Run 3^b	Run9^b	Variables	Run 1^b	Run2^b	Run4^b	Variables	Run 1^b	Run 2^b	Run 4^b
Log of sales	----	----	----	Log of sales	----	----	----	Log of sales	----	----	----
Log of GTFA	----	----	----	Log of GTFA	----	----	----	Log of GTFA	----	----	----
Log of TNA	----	----	----	Log of TNA	----	----	----	Log of TNA	----	----	----
PBITDA/TGA	----	----	----	PBITDA/TGA	----	----	----	PBITDA/TGA	----	----	----
PBT/TNA	----	----	----	PBT/TNA	----	----	----	PBT/TNA	----	----	1.008
NFA/TNA	1.337	----	1.343	NFA/TNA	1.008	----	----	NFA/TNA	----	----	----
GFA/TGA	----	----	----	GFA/TGA	----	----	1.031	GFA/TGA	----	----	----
(Nfa+Inv+AR)/TNA	----	----	----	(Nfa+Inv+AR)/TNA	----	1.000	----	(Nfa+Inv+AR)/TNA	1.000	----	----
INV/TNA	----	1.044	1.343	INV/TNA	----	----	----	INV/TNA	----	1.000	----
SD of PBITDA/TGA	----	----	----	SD of PBITDA/TGA	----	----	----	SD of PBITDA/TGA	----	----	----
COV of PBIT/TNA	----	----	1.214	COV of PBIT/TNA	----	----	----	COV of PBIT/TNA	----	----	----
CAGR of TNA	----	----	----	CAGR of TNA	----	----	----	CAGR of TNA	----	----	----
CAGR of sales	----	----	----	CAGR of sales	----	----	----	CAGR of sales	----	----	----
Depr/TGA	----	----	----	Depr/TGA	----	----	----	Depr/TGA	----	----	----
PBDIT/INT	----	----	----	PBDIT/INT	----	----	----	PBDIT/INT	----	----	----
Log of age	----	----	----	Log of age	----	----	----	Log of age	----	----	----
Eq Div/PAT	1.100	----	1.266	Eq Div/PAT	----	----	----	Eq Div/PAT	----	----	1.008
CA/CL	1.227	1.044	1.420	CA/CL	----	----	----	CA/CL	----	----	----
Net exp/Sales	----	----	----	Net exp/Sales	1.008		1.031	Net exp/Sales	----	----	----
DIV/SC	----	----	----	DIV/SC	----	----		DIV/SC	----	----	----
R&D/Sales	----	----	----	R&D/Sales	----	----	----	R&D/Sales	----	----	----
INT/DEBT	----	----	----	INT/DEBT	----	----	----	INT/DEBT	----	----	----

Table 6.3.4					
Final Regression runs on Debt ratio:STD1/TA (Transport Industry:18 companies) [Stepwise Regession results]					
Run1	Run2	Run3	Run4	Run5	Run6
Log of sales	Log of sales	Log of sales	Log of sales	Log of TNA	Log of TNA
------	PBT/TNA	------	PBT/TNA	PBT/TNA	PBT/TNA
NFA/TNA	NFA/TNA	NFA/TNA	NFA/TNA	NFA/TNA	NFA/TNA
------	------	INV/TNA	------	INV/TNA	INV/TNA
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
DIV/SC	------	DIV/SC	DIV/SC	DIV/SC	DIV/SC
None of the indicators are significant in Stepwise Regression					

Table 6.3.5								
Final Regression runs on Debt ratio:TC&E/TA (Transport industry :18 companies) [Stepwise Regession results]								
Run1	Run2	Run3	Run4	Run5	Run6	Run7	Run8	Run9
Log of sales	Log of sales	Log of sales	Log of TNA	Log of GTFA	Log of sales	Log of GTFA	Log of sales	Log of sales
PBT/TNA	PBT/TNA	PBT/TNA	PBT/TNA	PBITDA/TGA	------	PBITDA/TGA	PBT/TNA	PBT/TNA
NFA/TNA(-)	(Nfa+Inv+AR)/TNA	------	NFA/TNA(-)	GFA/TGA	NFA/TNA(-)	GFA/TGA	NFA/TNA(-)	NFA/TNA(-)
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	SD of PBITDA/TGA	COV PBIT/TNA	SD of PBITDA/TGA	COV PBIT/TNA	COV PBIT/TNA(-)
CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT(-)	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT(-)	Eq Div/PAT	Eq Div/PAT(-)	Eq Div/PAT	Eq Div/PAT(-)	Eq Div/PAT(-)
CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)	CA/CL(-)
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	------	------	DIV/SC	DIV/SC	DIV/SC	DIV/SC
------	------	------	------	------	------	Depr/TGA	------	------
------	------	------	------	PBDIT/INT	------	PBDIT/INT	------	------
------	------	INV/TNA(+)	------	------	------	------	------	INV/TNA(+)
R sq= .878	R sq =0.761	R sq =0.869	R sq= .878	R sq =0.761	R sq= .878	R sq =0.761	R sq= .878	R sq= .967
Adj R sq= .852	Adj R sq=.746	Adj R sq=.852	Adj R sq= .852	Adj R sq=.746	Adj R sq= .852	Adj R sq=.746	Adj R sq= .852	Adj R sq= .953

Table 6.3.6					
Final Regression runs on Debt ratio:LTD/TA (Transport Industry:18 companies) [Stepwise Regession results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of TNA	Log of TNA	Log of GTFA	Log of TNA	Log of GTFA
PBT/TNA	PBT/TNA	PBT/TNA	PBITDA/TGA	------	PBITDA/TGA
NFA/TNA(+)	(Nfa+Inv+AR)/TNA(+)	NFA/TNA(+)	GFA/TGA(+)	NFA/TNA(+)	GFA/TGA(+)
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	SD of PBITDA/TGA	COV PBIT/TNA	SD of PBITDA/TGA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of sales	CAGR of TNA	CAGR of sales
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales(+)	Net exp/Sales	Net exp/Sales(+)	Net exp/Sales(+)	Net exp/Sales(+)	Net exp/Sales(+)
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	------	DIV/SC	DIV/SC
------	------	------	------	------	Depr/TGA
------	------	------	PBDIT/INT	------	PBDIT/INT
R sq= .670	**R sq =0.499**	**R sq= .670**	**R sq =.556**	**R sq= .670**	**R sq =.556**
Adj R Sq = .627	**Adj R sq=.467**	**Adj R Sq = .627**	**Adj R sq=.497**	**Adj R Sq = .627**	**Adj R sq=.497**

Table 6.3.7					
Final Regression runs on Debt ratio:TL/TA (Transport Industry:18 companies) [Stepwise Regession results]					
Run1	**Run2**	**Run3**	**Run4**	**Run5**	**Run6**
Log of sales	Log of sales	Log of sales	Log of sales	Log of sales	Log of sales
PBT/TNA	PBT/TNA	PBT/TNA	PBT/TNA(-)	PBT/TNA	PBT/TNA
(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)	INV/TNA(+)	NFA/TNA	(Nfa+Inv+AR)/TNA(+)	INV/TNA(+)
COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA	COV PBIT/TNA
CAGR of TNA	CAGR of TNA	CAGR of sales	CAGR of TNA	CAGR of TNA	CAGR of TNA
Log of age	Log of age	Log of age	Log of age	Log of age	Log of age
Eq Div/PAT	Eq Div/PAT	Eq Div/PAT	Eq Div/PAT(-)	Eq Div/PAT	Eq Div/PAT
CA/CL	CA/CL	CA/CL	CA/CL	CA/CL	CA/CL
Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales	Net exp/Sales
R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales	R&D/Sales
INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT	INT/DEBT
------	------	------	DIV/SC	DIV/SC	DIV/SC
R sq =.417	**R sq = .326**	**R sq = .326**	**R sq = .458**	**R sq =.417**	**R sq = .326**
Adj R sq=.381	**Adj R sq= .284**	**Adj R sq= .284**	**Adj R sq= .386**	**Adj R sq=.381**	**Adj R sq= .284**

CHAPTER-7

FINDINGS AND CONCLUSION

CONTENTS

CHAPTER-7

FINDINGS & CONCLUSION

In this chapter, the major findings of this study have been summarized. The results of trend analysis conducted for total sample of FDI Companies in India along with industry-wise trend analysis are discussed. Major findings of empirical analysis conducted at firm level to study the Determinants of Capital Structure of FDI Companies in India and empirical results based on industry-wise analysis are summarized in this chapter. The chapter ends with statement of key implications, limitations of the study and suggestions and scope for further research in the related area.

7.1 Background of the Study

FDI flows are generally perceived as major vehicles for growth of a developing economy like India. More and more Indian companies from several industries are trying to attract Foreign Direct Investments, and one of the ways is to encourage equity participation by foreign affiliates. Government of India is also adopting a liberalized policy towards its inward FDI flows. This study is undertaken to identify the factors which influence the decisions relating to the financing mix- the Capital Structure decision adopted by Foreign Direct Investment Companies in India. It is difficult to find empirical evidence as to how actually FDI Companies make a choice between financial instruments to determine their Capital Structure and hence an attempt has been made in this study by employing firm level data to identify Capital Structure Determinants of FDI Companies in India.

The main *objective* of the study has been to examine the trends and patterns of financing mix adopted by FDI Companies in India over the study period and to identify the major Determinants influencing the Capital Structure decisions of FDI Companies in India by undertaking empirical analysis at firm level and also at industry level by grouping the sample FDI Companies into various industries.

For the purpose of undertaking this study, the selected sample of 140 Foreign Direct Investment companies in India represented eleven industries. Each of these companies has 10% or more of foreign promoter's shares in their equity holdings as on 31/03/2007 and hence are selected as sample FDI Companies in India. The period of the study is eighteen years, starting from the year 1990-1991 to the year 2007-2008.

To test the hypotheses of the study (As mentioned in Chapter-3, Section 3.2), Sixteen measures of Capital Structure: a variety Debt Ratios categorized into three major heads: a) Short Term Debt Ratios, b) Long Term Debt Ratios and c) Total Debt Ratios have been applied in the study. In this study, Fourteen Independent Variables (Determinants Of Capital Structure) explained by Thirty-Four Indicators have been selected to study the impact of these Determinants on Capital Structure policies of 140 sample firms of FDI Companies in India. The list of all the Debt Ratios, their abbreviations, List of the Determinants of Capital Structure and definitions of all the indicators of the Determinants and their abbreviations used are presented below:

Measures of Debt Ratios			
Sr. No	**Dependent Variable (Debt Ratios)**	**Abbreviation**	**Category**
1	Bank Borrowings Repayable in Less than One Year / Total assets	STBB+CPLTD/TA	STDRatio1
2	Short Term Debt / Total Assets	STD/TA	STDRatio2
3	Short Term Debt1/ Total Assets	STD1/TA	STDRatio3
4	Total Trade Credit & Equivalent / Total Assets	TC&E/TA	STDRatio4
5	Short Term Debt/ Net Worth	STD/NW	STDRatio5
6	Short Term Debt 1/ Net Worth	STD1/NW	STDRatio6
7	Bank Borrowings Repayable in More than One Year/ Total Assets	LTBB/TA	LTDRatio1
8	Long Term Debt/ Total Assets	LTD/TA	LTDRatio2
9	Long Term Debt / Networth	LTD/NW	LTDRatio3
10	Long Term Debt / (Networth + Long Term Debt)	LTD/(NW+LTD)	LTDRatio4
11	Long Term Borrowings / Short Term Borrowings 1	LTD/STD1	LTDRatio5
12	Total Debt / Total Assets	TD/TA	TDRatio1
13	Total Liabilities / Total Assets	TL/TA	TDRatio2
14	Total Debt / Networth	TD/NW	TDRatio3
15	Total Debt/ Total Debt+Networth	TD/(TD+NW)	TDRatio4
16	Total Liabilities/ Networth	TL/NW	TDRatio5
Note: STD Ratio = Short Term Debt Ratio, LTD Ratio = Long Term Debt Ratio, TD Ratio = Total Debt Ratio			

Definitions of Independent Variables- Determinants of Capital Structure			
Sr. No	Determinants	Indicators	Abbreviation
1	Size	Natural Logarithm of Sales	Log of sales
		Natural Logarithm of Gross Total Fixed Assets	Log of GTFA
		Natural Logarithm of Total Net Assets	Log of TNA
2	Profitability	Profit Before Interest & Tax /Total Net assets	PBIT/TNA
		Profit Before Interest,Tax, Depreciation & Amortization /Total Gross Assets	PBITDA/TGA
		Profit Before Tax /Total Net Assets	PBT/TNA
		Profit Before Interest & Tax / Sales	PBIT/Sales
		Profit Before Interest & Tax / Capital Employed	PBIT/CE
3	Collateral	Net Fixed Assets/Total Net Assets	NFA/TNA
		Gross Fixed Assets /Total Gross Assets	GFA/TGA
		(Net Fixed Assets +Inventory +Accounts Receivable)/ Total Net Assets	(Nfa+Inv+AR)/TNA
		Land &Building /Total Gross Assets	L&B/TGA
		Plant & Equipment /Total Gross Assets	P&E/TGA
		Inventories/Total Net Assets	INV / TNA
4	Volatility	Standard Deviation of Profit Before Interest &Tax	SD of PBIT
		Standard Deviation of Percentage Change in Profit Before Interest &Tax	SD of % change in PBIT
		Standard Deviation of Profit Before Interest, Tax, Depreciation & Amortization / Total Gross Assets	SD of PBITDA/TGA
		Coefficient of Variation of Profit Before Interest & Tax	COV of PBIT
		Coefficient of Variation of Profit Before Interest & Tax/Capital employed	COV of PBIT to CE
		Coefficient of Variation of Profit Before Interest & Tax/Total Net Assets	COV of PBIT to TNA
5	Growth Rate	Compount Annual Growth Rate of Total Assets	CAGR of TNA
		Compount Annual Growth Rate of Sales	CAGR of Sales
6	Non-Debt Tax Shields	Depreciation /Total Gross Assets	Depr/TGA
		Depreciation+ Export Turnover /Total Gross Assets	Depr+ET/TGA
		Depreciation /Profit Before Interest, Tax, Depreciation& Amortization	Depr/PBITDA
7	Debt Service Capacity	Profit Before Interest, Tax& Depreciation/Interest payments	PBDIT/INT
8	Age	Age as on 31-03-2008	Age as on 31-03-2008
		Natural Logarithm of Age of firm	Log of age of firm
9	Dividend Payout	Equity Dividend /Profit After Tax	Equity Div/PAT
10	Liquidity	Current Assets /Current Liabilities	CA/CL
11	Net Exports	Net Exports /Sales	Net exp/Sales
12	Cost of Equity	Dividend Payment/ Share Capital+Reserves	DIV/SC
13	Uniqueness	Research & Development Expenditure / Sales .	R&D /Sales
14	Cost of Borrowing	Interest Payment/Total Debt	INT /DEBT

For the purpose of testing the main hypotheses of the study (As mentioned in Chapter-3, Section 3.2), Simple Linear Regressions, Quadratic Trend model, and Multiple Regression Technique have been applied. Along with these techniques, the other statistical tools like Mean, Median, Standard Deviation, Coefficient of variation, Bivariate Correlations to compute Pearson's correlation coefficients among the explanatory variables coefficients have also been applied. Test of significance like t-test, F-test, p-value, Durbin-Watson statistic (D statistic) to detect autocorrelation, Variance inflationary Factor (VIF) to detect collinearity among explanatory variables have also been applied to test the hypothesis. Apart from the above statistical tools, Ratio analysis and Trend analysis have also been used for the purpose of the study.

7.2 Methodology Adopted

To undertake the present study, the following research methodology was adopted:

Trend analysis: Proportion of various components of Capital Structure: The general trends in Capital Structure of 140 FDI Companies in India as well as the industry-wise trends have been studied by calculating year-wise Debt Ratios for the period from 1991 to 2008, their Mean, Median, Standard Deviation (SD) and Coefficient of Variation (COV). Trends reflected in Composition of Owner's Funds, the Financing Mix adopted, Composition of Total Non-Equity Liabilities, Retention Ratios, Composition of Total Sources of Funds are also studied.

Trends over a period of time (Time Trends): Various Debt Ratios (Table 3.3, Chapter-3) are regressed on time to examine the rate of change in Ratio per year. To study the time trends in Capital Structure of FDI Companies, the 'Method of Least Squares' is applied. In the first step, to examine whether Debt Ratios of FDI Companies in India exhibit a significant linear trend, the Linear Trend Model (The Simple Linear Regression equation) is applied. However, in some Debt Ratios, on observing the Durbin Watson - "D' statistic, the problem of first order autocorrelation is detected. This can be due to specification bias in the model, that is, the Ratio actually follows the non-linear trend, rather than the linear trend. To take care of this, Quadratic model is also fitted.

Determinants of Capital Structure: In this study, empirical analysis at firm level as well as industry-wise empirical analysis is conducted. In the *first stage* of empirical analysis at firm level, simple linear regressions between each indicator of an independent variable one at a time, with each Debt Ratio are conducted. In the *second stage* of empirical analysis, out of the thirty-four indicators explaining fourteen independent variables, twenty-two indicators which had significant impact on Debt Ratios in simple regressions are selected for conducting multiple regression analysis. The number of independent variables (Determinants of Capital Structure) still remains the same.

For conducting multiple regressions, four measures of Capital Structure, which include two Short Term Debt measures (STD1/TA and TC&E/TA), one Long Term Debt measure (LTD/TA) and one Total Debt measure (TL/TA) are selected. A Correlation Matrix among various indicators of Determinants is used to examine multicollinearity problem. For conducting multiple regressions, the standard model of regression as well as stepwise regression method has been employed in this study. 'Thirty-Three' multiple regression runs for each Short Term Debt measure and 'thirty' multiple regression runs for Long Term Debt and Total Debt Measure each (Table 5.29, 5.30, 5.31, 5.32 , Chapter-5) are conducted. Out of these regression runs, only those regression runs which were able to explain more than 50% of variation in the Debt Ratio are reported. Variance inflationary factors for each regression run are also reported.

For conducting industry-wise empirical analysis, three major industry groups – Chemical Industry, Machinery industry and Transport Industry having at least 15 member companies are selected for industry-wise analysis. This is necessary for having at least ten data points for conducting multiple regression analysis and only these three industries satisfy this criterion. The same debt measures as applied in empirical analysis at firm level study are selected for carrying out multiple regressions in industry-wise analysis. The same regression runs as reported at firm level analysis (Chapter-5) are also conducted for each selected industry and the best multiple regression runs in each industry are reported for further industry-wise comparison on Capital Structure Determinants. Industry-wise Correlation Matrix, Variance inflationary factors for each reported multiple regression run of each industry are also presented.

7.3 Major Findings

The major findings of Trend Analysis of Capital Structure of FDI Companies in India conducted in Chapter-4 are summarized as follows:

I Trend Analysis

7.3.1 Trends over a Period of Time (Time Trends)

1. The study rejects the null hypotheses (H_{01}, Chapter-3) that no significant linear trend is observed in Debt Ratios of FDI Companies over a period of time and that the Debt Ratios of FDI Companies do not change with passage of time and accepts the alternative hypotheses that significant linear and quadratic (curvilinear) trends are observed in Debt Ratios of FDI Companies in India.

2. The study rejects the null hypothesis (H_{02}, Chapter-3) that no significant linear trend is observed in industry-wise Debt Ratios of FDI Companies over a period of time and that the industry-wise Debt Ratios of FDI Companies do not change with passage of time and accepts the alternative hypotheses that significant linear and quadratic (curvilinear) trends are observed in industry-wise Debt Ratios of FDI Companies over a period of time.

3. To study the Time Trends in Capital Structure for the overall sample of 140 FDI Companies, the 'Method of Least Squares' is applied. First Linear Trend Model (Table 4.2.6-The simple linear regression, Chapter-4) was run. On examining 'D' statistics, need was felt to apply quadratic equation and hence Quadratic Trend Model (Table 4.2.7, Chapter-4) was also applied. Time trend analysis revealed that some Debt Ratios exhibited linear trend. They are STBB+CPLTD/TA (-ve), STD/TA (-ve), STD/NW (-ve), LTBB/TA (+ve), and LTD/(NW+LTD) (-ve). The Ratios in which Quadratic trend model fitted the best are STD1/TA, TC&E/TA, STD1/NW, LTD/NW, TL/TA, TD/NW, TD/(TD+NW), TL/NW. The quadratic trend indicated that these Debt Ratios are decreasing at an increasing rate. The Debt Ratios LTD/TA and TD/TA decrease at an increasing rate, however the problem of autocorrelation persists

as the 'D' statistic of LTD/TA Ratio lies below the lower critical value and the D' statistic of TD/TA Ratio lies in the inconclusive area.

4. For studying industry-wise time trends, five major industry groups are selected- Chemical Industry, Food Industry, Machinery Industry, Services industry and Transport Industry. The industry-wise time trends observed are summarized as follows:

Industry-Wise Results of Time Trends	
LINEAR TREND	
Industry	**Debt Ratios**
Food	STD/NW(-ve), LTD/(NW+LTD)(-ve), TD/NW(-ve) and TD/(TD+NW) (-ve)
Chemicals	TC&E/TA (-ve) and LTD/NW (-ve)
Machinery	STD/TA(-ve), STD1/NW(-ve), LTBB/TA(-ve), LTD/NW(-ve), TD/NW (-ve), TD/(TD+NW) (-ve).
Transport	STBB+CPLTD/TA (-ve), STD/TA (-ve) and STD1/TA (-ve)
Services	STD/TA (-ve)
QUADRATIC TREND	
Industry	**Debt Ratios**
Food	STD1/TA, TC&E/TA and TL/TA
Chemicals	STBB+CPLTD/TA, STD/TA, STD/NW, STD1/NW, LTD/TA, LTD/(NW+LTD), TD/TA, TD/NW, TD/(TD+NW) and TL/NW
Machinery	STD1/TA, TC&E/TA, STD/NW, TD/TA, TL/TA and TL/NW.
Transport	TC&E/TA, TD/TA, TL/TA, TD/(TD+NW) and TL/NW.
Services	STBB+CPLTD/TA, STD1/TA and TC&E/TA
NO TREND	
Industry	**Debt Ratios**
Food	STBB+CPLTD/TA, STD/TA, LTBB/TA, LTD/NW and TD/TA
Chemicals	LTBB/TA
Machinery	STBB+CPLTD/TA and LTD/(NW+LTD)
Transport	STD/NW, STD1/NW, LTD/NW, LTBB/TA, LTD/(NW+LTD) and TD/NW.

Services	STD/NW, STD1/NW, LTBB/TA, LTD/TA, LTD/NW, LTD/(NW+LTD), TD/TA, TD/NW, TD/(TD+NW) and TL/NW
Ratios Decreasing at an Increasing Rate but Problem of Autocorrelation Persists	
Industry	**Debt Ratios**
Food	STD1/NW, TL/NW
Chemicals	STD1/TA and TL/TA
Machinery	LTD/TA
Transport	LTD/TA
Services	TL/TA

7.3.2 Proportion of Various Components of Capital Structure- (Overall and Industry-Wise Trends):

5. FDI Companies in India resort to low debt levels in their Capital Structure. During the initial years of liberalization in 1991 and 1992, the debt levels seem to be high and then show a continuous declining trend (Table 4.2.1, Chapter-4). There has been a marked decline in preference of Long Term Debt Funds as Long Term Debt Ratios have shown a significant decline throughout the study period (Figure 4.1.4, Chapter-4). Even Long Term Debt Ratios in various industries show a similar declining trend indicating that preference for Long Term Debt in the Capital Structure of FDI Companies in India has declined over the study period.

6. Figure 7.1 indicates that out of all the sources of funds, FDI Companies in India heavily depend on their internal funds in the form Reserves & Surplus followed by Current Liabilities (Trade Credits & Equivalents) as the next most important source of funds. Long Term Bank Borrowings and Debentures contribution towards long term debt sources and to the total sources of funds is very meager as it has been observed that Long Term Bank Borrowings and Debentures have contributed only around 3% and 4% respectively towards the total sources of funds of FDI Companies in

India. Surprisingly Short Term Bank Borrowings occupy only 6% share in total sources of funds and Long Term Bank Borrowings contribute only 3%, which means, bank financing is also not much a preferred source of finance for FDI Companies in India.

7. It is observed that a major proportion of Total Liabilities (Figure 7.2) consist of Short Term Debt Funds and in Short Term Debt Funds, Current Liabilities & Provisions are the most dominant and the most preferred source of finance. Commercial paper contributes a negligible proportion towards Short Term Debt Funds. The preference for Debentures as a source of finance has shown a declining trend from 6% in the year 1991 to 1% in the year 1998.

8. The average composition of Owner's Funds of FDI Companies (Table 4.2.2, Chapter-4) indicates that the proportion of Internal Funds in the form of Reserves & Surplus have shown a marked increase over the study period, whereas the proportion of Share Capital in Owner's Funds has declined over the study period indicating that these companies must be profitable companies with high retention Ratios. The average retention Ratios prove the fact that indeed FDI Companies have very high retention Ratios (Table 4.2.5, Chapter-4). It also indicates that additional equity has not been issued to raise finance. Inessa L& Maria S (2005)[1] in their study had also found that foreign owned firms have lower debt levels; it was believed by them that one of the reasons could be easier access to foreign equity finance among foreign owned firms. But this does not seem to be the case in this study. It is observed that FDI Companies in India believe in using more of internally generated funds rather than externally generated funds to finance their investments and prefer Short Term Debt over long term debt, then use long term debt to finance their long term assets and do not prefer to issue additional equity to raise finance. This seems to be characteristic feature of FDI Companies in India, which in turn might be making them an attractive FDI destination companies.

Figure 7.1 Composition of Total Sources of Funds
(Average of 140 FDI Companies from 1991-2008)

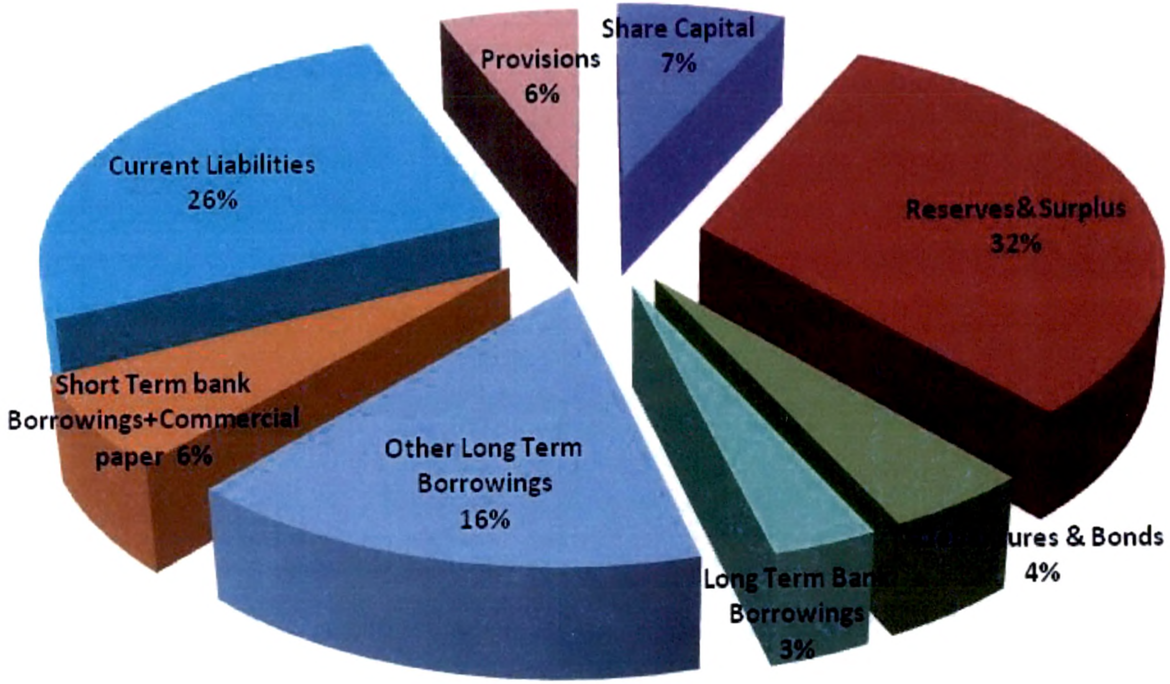
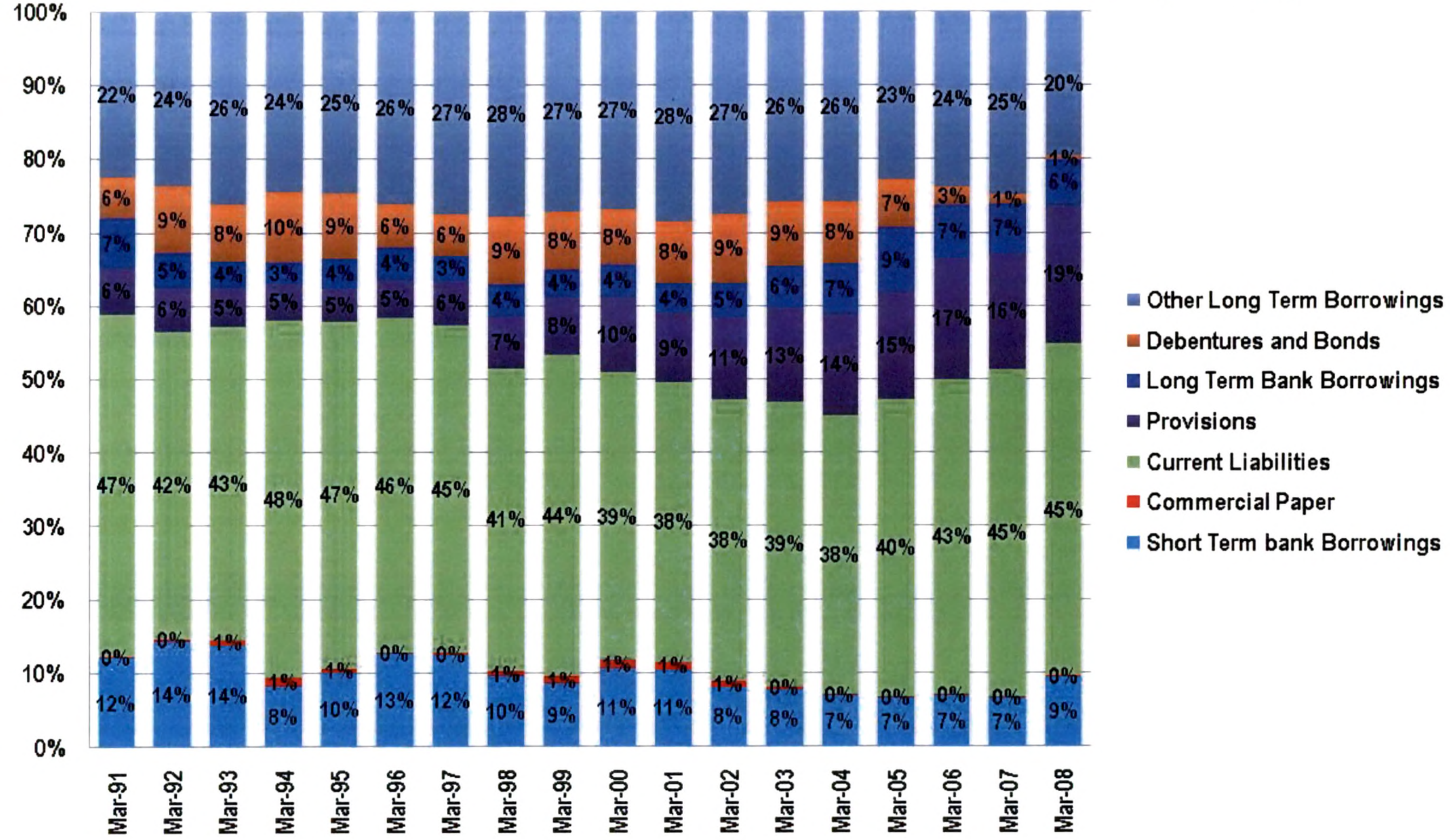


Figure 7.2

Financing Pattern of 140 FDI Companies in India - Composition of Total Liabilities (Non-Equity)



II Determinants of Capital Structure

Since the trend analysis of FDI Companies in India revealed that Short Term Debt contributed a major proportion in the total financing mix, it became all the more important to study the Determinants of Short Term Debt Ratio along with Long Term and Total Debt Ratios. The term Capital Structure refers to permanent financing of a company, mainly the proportion of Long Term Debt and Equity mix which a company uses to finance its operations, whereas the term Financial Structure denotes the way in which a company's assets are financed. In this study, since the Determinants of various forms of Short Term Debt Ratios are studied along with Long Term and Total Debt Ratios, the term Financial Structure or Capital Structure have been used as synonyms.

To infer the Determinants for different measures of Capital Structure for all FDI Companies under study and for different industries together, the findings of Chapter-5 and Chapter-6 are presented here jointly.

7.3.3 Major Findings– Simple Regressions

The summarized simple regression results have been presented in (Table 5.16, Chapter-5). The main conclusions derived from the results of simple linear regressions conducted between each indicator of an independent variable, one at a time, with each Debt Ratio (dependent variable) are as follows:

1. The results of simple linear regressions between each indicator of an independent variable with each Debt Ratio reject the null hypothesis (H_{03} to H_{16}, as mentioned in Chapter-3) that there is no significant impact of Size of a company, Profitability of a company, Collateral Value of Assets, Volatility of companies' earnings, Growth Rate of a company, existence of Non Debt Tax Shields, Debt Service Capacity, Age of a company, Dividend Payout, Liquidity, Net Exports, Cost of Borrowings, Cost of Equity and Uniqueness of a company on a company's Debt Ratios and accepts the alternative hypothesis that all the above mentioned Determinants have significant impact on Debt Ratios (Capital Structure) of FDI Companies in India

2. **Size** as measured by Log of GTFA has significant negative impact on Short Term Debt Ratios, but has significant positive impact on Long Term Debt Ratios. Size as measured by Log of Sales has significant positive impact on TC&E/TA Ratio. Size generally has insignificant impact on Total Debt Ratios except in case of TD/TA Ratio where Size as measured by Log of GTFA has positive impact on the Ratio. This indicates that large size companies having large fixed assets tend to borrow more of Long Term Debt rather than Short Term Debt.

3. **Profitability** has significant negative impact on all the Debt Ratios. This result confirms the prediction of the Pecking Order Theory according to which, profitable companies having large cash flows tend to have low Debt Ratios.

4. **Collateral** indicators NFA/TNA and GFA/TGA have significant negative impact on Short Term Debt Ratios but have significant positive impact on Long Term and Total Debt Ratios. Collateral indicators (Nfa+ Inv+ AR)/TA and INV/TNA have significant positive impact on Short Term Debt Ratios. Collateral indicators - INV/TNA has significant negative impact on Long Term Debt Ratios. This indicates that Collaterals in the form of Tangible Fixed Assets are used to borrow Long Term Debt Funds, at the same time, Collaterals in the form of Inventories and Accounts Receivables support Short Term Debt.

5. **Volatility** indicator COV of PBIT/TNA has significant positive impact on all the Short Term and Total Debt Ratios. Another indicator of Volatility - SD of PBIT has negative impact on Short Term Debt Ratios STBB+CPLTD/TA and STD/TA but has insignificant impact on all the other Debt Ratios. The other indicator of Volatility - COV of PBIT/CE also has negative impact on TC&E/TA Ratio and on TL/TA Ratio, but has insignificant impact on all the other Debt Ratios. The results of the indicator COV of PBIT/TNA are more consistent as they indicate significant positive impact on all the Short Term and Total Debt Ratios and indicate that firms having volatile earnings tend to borrow more Short Term Debt Funds.

6. **Growth Rate** as measured by CAGR of TNA has significant negative impact on Short Term Debt Ratios and Total Debt Ratio – TL/ TA, but has insignificant impact on Long Term Debt Ratios. This indicates that high growth firms in terms of Total assets tend to borrow less from Short Term Debt Funds.

7. **Non Debt Tax Shield** indicators have negative impact on Short Term Debt Ratios, positive impact on Long Term Debt Ratios and Total Debt Ratios.

8. **Debt Service Capacity** has negative impact on STD/TA Ratio and Total Debt Ratios but has insignificant impact on Long Term Debt Ratios. This reveals that in spite of having sufficient Debt Servicing Capacity, companies do not resort to high debt levels for financing purposes.

9. **Age** has positive impact on TC&E/TA Ratio and significant negative impact on Long Term and Total Debt Ratios. This indicates that Mature Age firms prefer to borrow more from Short Term Debt Funds rather than borrowing from Long Term Debt sources.

10. **Dividend Payout** has negative impact on STD / NW Ratio, LTD / TA Ratio, and on Total Debt Ratios indicating that generally companies having higher Dividend Payouts will borrow less.

11. **Liquidity** has significant negative impact on Short Term Debt Ratios-STD1/TA Ratio and TC& E/TA Ratio, and Total Debt Ratios – TL/TA Ratio and TL/NW Ratio. Liquidity has insignificant impact on Long Term Debt Ratios. This means that companies having liquid assets will borrow less.

12. **Net Exports** have significant positive impact on Short Term Debt Ratios-STD1/TA Ratio and TC&E/TA Ratio and on Total Debt Ratios – TL/TA Ratio and TL/NW Ratio. Net Exports have insignificant impact on Long Term Debt Ratios. The results indicate that companies which are Net Exporters might borrow more from Short Term Debt sources.

13. **Cost of Equity** has significant negative impact on Short Term, Long Term and Total Debt Ratios. This means that as the Cost of Equity increases companies tend to borrow less.

14. **Cost of Borrowings** has significant positive impact on Short Term Debt Ratios- STD1/TA Ratio and TC& E/TA Ratio, significant negative impact on Long Term Debt Ratios – LTBB/TA Ratio and LTD/TA Ratio and on Total Debt Ratio – TD/TA Ratio. The results indicate that as Cost of Borrowings increase, companies prefer to borrow from Short Term Debt sources.

7.3.4 Major Findings– Multiple Regressions

1. At firm level multiple regression analysis, the study rejects the null hypothesis (H_{03}, H_{04}, H_{05}, H_{06}, H_{07}, H_{08}, H_{10}, H_{12}, H_{13}, H_{14}, H_{15} and H_{16}, as mentioned in Chapter-3) that there is no significant impact of Size of a company, Profitability of a company, Collateral value of assets, Volatility of companies' earnings, Growth rate of a company, existence of Non Debt Tax Shields, Age of a company, Liquidity, Net Exports, Cost of borrowings, Cost of Equity and Uniqueness of a company on a company's Debt Ratios. The study accepts the alternative hypothesis that all the above mentioned Determinants have significant impact on Debt Ratios (Capital Structure) of FDI Companies in India.

2. At firm level multiple regression analysis, the study accepts the null hypothesis (H_{09} , As mentioned in Chapter-3), that there is no significant impact of **Debt Service Capacity** of a company on Debt Ratios. This is due to the fact that Debt Service Capacity was not a significant predictor in multiple regressions conducted on various Debt Ratios.

3. At firm level multiple regression analysis, the study accepts the null hypothesis (H_{11} , As mentioned in Chapter-3), that there is no significant impact of **Dividend Payout** of a company on Debt Ratios. Dividend Payout was not a significant predictor in multiple regressions conducted on various Debt Ratios.

4. At Industry-wise analysis of Determinants of Capital Structure, the study rejects the null hypothesis that there is no significant impact of Size of a company, Profitability of a company, Collateral value of assets, Volatility of companies' earnings, existence of Non Debt Tax Shields, Age of a company, Dividend Payout, Liquidity, Net Exports, Cost of borrowings, Cost of Equity

and Uniqueness of a company on a company's Debt Ratios. The study accepts the alternative hypothesis that all the above mentioned Determinants have significant impact on Debt Ratios of FDI Companies from three major industry groups – Chemical, Machinery and Transport industry.

5. At Industry-wise analysis of Determinants of Capital Structure, the study accepts the null hypothesis that there is no significant impact of Growth rate of a company and Debt Service Capacity of a company on Debt Ratios as these Determinants were not a significant predictor in multiple regressions conducted on various Debt Ratios of the selected industry groups.

7.3.4.1 Results of Multiple Regressions of STD1/TA Ratio

This is an overall Short Term Debt Ratio comprising all forms of Short Term Debt: Short Term Bank Borrowings, Commercial Paper, and Current Liabilities & Provisions. The summary results of multiple regressions conducted on STD1/TA Ratio at firm level analysis and across industries are presented in Table -7.1 and reveal that:

1. **Size** is not a significant Determinant of STD1/TA Ratio either for overall sample or at industry level analysis.

2. **Profitability** has significant negative impact on STD1/TA Ratio of overall sample but is not a significant Determinant at industry level analysis of STD1/TA Ratio.

3. **Collaterals** in the form of Fixed Assets as measured by NFA/TNA have significant negative impact on STD1/TA Ratio of the overall sample as well as on Chemical Industry and Machinery Industry. Collateral effect as measured by INV/TNA has significant positive impact on STD1/TA Ratio of overall sample only. This indicates that FDI Companies in India follow the **'Matching Principle'** as their financing policy. "According to this principle, the maturity of the sources of financing should match the maturity of the assets being financed. This means that fixed assets and permanent current assets should be supported by long term sources of finance whereas fluctuating

current assets must be supported by short term sources of finance", (Chandra Prasanna, 5^{th} Edition, page 597)[2].

4. **Volatility** has significant positive impact on STD1/TA Ratio of overall sample as well as STD1/TA Ratio of Machinery industry.

5. **Growth rate** as measured by Compound Growth Rate of Sales has significant positive impact on STD1/TA Ratio for the overall sample but is not a significant predictor of STD1/TA Ratio at industry level.

6. **Non Debt Tax Shields** do not have any significant impact on STD1/TA Ratio either for overall sample or at industry level analysis.

7. **Debt Service Capacity** has no significant impact on STD1/TA Ratio of overall sample or at industry level analysis.

8. **Age** is not a significant Determinant of STD1/TA Ratio either for overall sample or at industry level analysis

9. **Dividend Payout** has no significant impact on STD1/TA Ratio of overall sample or at industry level analysis

10. **Liquidity** has significant negative impact on STD1/TA Ratio of overall sample as well as on STD1/TA Ratio of Chemical and Machinery industry indicating that greater liquid assets would mean lower Short Term Debt ratios as major working capital requirements would be financed out of these liquid assets.

11. **Net Exports** have no significant impact on STD1/TA Ratio of overall sample or at industry level analysis.

12. **Cost of Equity** has significant positive impact on the overall sample but is not a significant Determinant at industry level analysis. The positive impact of Cost of Equity on STD1/TA Ratio indicates that if costs of equity increases, FDI Companies borrow more from Short Term Debt sources.

13. **Uniqueness** of a firm has no significant impact on STD1/TA Ratio of overall sample or at industry level analysis.

14. **Cost of Borrowings** have no significant impact on STD1/TA Ratio of overall sample or at industry level analysis.

Table 7.1

Summary of Results of Mutiple Regressions on STD1/TA ratio of FDI companies in India

Independent Variables	Indicators	Overall sample (140 companies)	Chemical Industry (37 companies)	Machinery Industry (38 companies)	Transport Industry (18 companies)
Size	Log of sales	N.S	N.S	N.S	None of the indicators are significant
	Log of TNA	N.S	N.S	N.S	
	Log of GTFA	---	---	---	
Profitability	PBT/TNA	-VE**	N.S	N.S	
	PBITDA/TGA	---	---	---	
Collateral	NFA/TNA	-VE**	-VE**	-VE**	
	GFA/TGA	---	---	---	
	(Nfa+Inv+AR)/TNA	---	---	---	
	INV/TNA	+VE**	N.S	N.S	
Volatility	COV of PBIT/ TNA	+VE**	N.S	+VE**	
	SD of PBITDA/TGA	---	---	---	
Growth rate	CAGR of TNA	N.S	N.S	N.S	
	CAGR of Sales	+VE**	N.S	N.S	
NDTS	Depr/TGA	---	---	---	
Debt Service capacity	PBDIT/INT	---	---	---	
Age	Log of age of firm	N.S	N.S	N.S	
Dividend payout	Equity Div/PAT	N.S	N.S	N.S	
Liquidity	CA/CL	-VE**	-VE**	-VE**	
Net Exports	Net exp/Sales	N.S	N.S	N.S	
Cost of Equity	DIV/SC	+VE**	N.S	N.S	
Uniqueness	R&D/Sales	N.S	N.S	N.S	
Cost of Borrowing	INT/DEBT	N.S	N.S	N.S	

* indicates significance at 5% level, ** indicates significance at 1% level

Not Significant=(NS), Positive= (+VE), Negative =(-VE)

A Dash means -- the indicator is not included in final regression runs

7.3.4.2 Results of Multiple Regressions of TC&E/TA Ratio

Since Current Liabilities emerged as one of the most important source of financing adopted by FDI Companies in India, this measure was selected for multiple regressions conducted at firm level and industry level analysis. The summary results of multiple regressions conducted on TC&E/TA Ratio at firm level analysis and across industries are presented in Table -7.2 and reveal that:

1. **Size** as measured by Log of sales has positive impact on TC&E/TA Ratio of overall sample as well as on Chemical industry indicating that as the Size of

company in terms of sales increases, its requirement for short term funds to meet the financing requirements of working capital also increase which are met through availing trade credits facilities.

2. **Profitability** has significant negative impact on TC&E/TA Ratio of overall sample and on Machinery industry. The results indicate that profitable FDI Companies in India do not prefer to borrow even from short term sources like trade credit as they have sufficient internally generated cash reserves to meet their short term financing requirements.

3. **Collaterals** in the form of fixed assets as measured by NFA/TNA have significant negative impact on TC&E/TA Ratio of the overall sample as well as on Machinery Industry and Transport Industry. Collateral effect as measured by GFA/TGA has significant negative impact on TC&E/TA Ratio of overall sample as well as on Chemical industry and Machinery industry. Collateral indicator INV/TNA has significant positive impact on overall sample and on Transport industry again confirming the 'Maturity Matching Principle" of financing the assets. Collateral indicator Nfa+Inv+AR/TNA has significant positive impact on TC&TA Ratio of overall sample only.

4. **Volatility** has significant positive impact on TC&E/TA Ratio on the overall sample as well as on Chemical and Machinery Industry. Volatility has significant negative impact on TC&E/TA Ratio of Transport industry. This shows that FDI Companies from Transport industry adopt a conservative approach when there are volatile earnings.

5. **Growth rate** does not have any significant impact on TC&E/TA Ratio either for overall sample or at industry level analysis

6. **Non Debt Tax Shields** do not have any significant impact on TC&E/TA Ratio either for overall sample or at industry level analysis.

7. **Debt Service Capacity** has no significant impact on TC&E/TA Ratio of overall sample or at industry level analysis.

Table 7.2					
Summary of Results of Mutiple Regressions on TC&E/TA ratio of FDI companies in India					
Independent Variables	**Indicators**	**Overall sample (140 companies)**	**Chemical Industry (37 companies)**	**Machinery Industry (38 companies)**	**Transport Industry (18 companies)**
Size	Log of sales	+VE**	+VE**	N.S	N.S
	Log of TNA	N.S	N.S	---	---
	Log of GTFA	N.S	---	N.S	---
Profitability	PBT/TNA	-VE*	N.S	N.S	N.S
	PBITDA/TGA	-VE**	N.S	-VE**	---
Collateral	NFA/TNA	-VE**	N.S	-VE**	-VE**
	GFA/TGA	-VE**	-VE**	-VE**	---
	(Nfa+Inv+AR)/TNA	+VE**	N.S	N.S	---
	INV/TNA	+VE**	---	N.S	+VE**
Volatility	COV of PBIT/ TNA	+VE*	+VE**	+VE**	-VE*
	SD of PBITDA/TGA	N.S	N.S	+VE**	---
Growth rate	CAGR of TNA	N.S	N.S	N.S	N.S
	CAGR of Sales	N.S	N.S	N.S	N.S
NDTS	Depr/TGA	N.S	---	N.S	---
Debt Service capacity	PBDIT/INT	N.S	N.S	N.S	---
Age	Log of age of firm	+VE*	+VE**	N.S	N.S
Dividend payout	Equity Div/PAT	N.S	+VE*	N.S	-VE**
Liquidity	CA/CL	-VE**	-VE**	-VE**	-VE**
Net Exports	Net exp/Sales	N.S	N.S	N.S	N.S
Cost of Equity	DIV/SC	+VE*	---	N.S	N.S
Uniqueness	R&D/Sales	-VE**	N.S	N.S	N.S
Cost of Borrowing	INT/DEBT	+VE**	N.S	N.S	N.S
* indicates significance at 5% level, ** indicates significance at 1% level					
Not Significant=(NS), Positive= (+VE), Negative =(-VE)					
A Dash means -- the indicator is not included in final regression runs					

8. **Age of a firm** has significant positive impact on TC&E/TA Ratio for the overall sample as well as on Chemical industry indicating mature firms have easier access to trade credit as a source of finance.

9. **Dividend Payout** has significant positive impact on TC&E/TA Ratio of Chemical industry but has significant negative impact on TC&E/TA Ratio of Transport industry. The result indicate that Chemical industry FDI Companies borrow more of Short Term Trade Credit when Dividend Payout is high whereas Transport industry follow a conservative approach, do not borrow from even Short Term Debt sources like Trade credits when the Dividend Payout is high.

10. **Liquidity** is a significant predictor of TC&E/TA Ratio and has significant negative impact on the overall sample as well as on all the three industries

again indicating that greater liquid assets would mean lower preference for Trade Credits & Equivalents as major working capital requirements would be financed out of these liquid assets.

11. **Net Exports** have no significant impact on TC&E/TA Ratio of overall sample or at industry level analysis.

12. **Cost of Equity** has significant positive impact on the overall sample but is not a significant Determinant at industry level analysis. The positive impact of Cost of Equity on TC&E/TA Ratio confirms the fact that if the Cost of Equity increases, FDI Companies borrow more from Short Term Debt sources and especially meet their financing requirements by availing short term trade credit.

13. **Uniqueness** has significant negative impact on TC&E/TA Ratio of the overall sample but is not a significant Determinant of TC&E/TA Ratio at industry level analysis. This result indicates that unique firms may have difficulty to obtain easy trade credit facilities.

14. **Cost of Borrowing** has significant positive impact on TC&E/TA Ratio of the overall sample but is not a significant Determinant of TC&E/TA Ratio at industry level analysis. The result indicates that as the Cost of Borrowing rises, FDI Companies resort to non interest bearing debt funds like Trade Credit.

7.3.4.3 Results of Multiple Regressions on LTD/TA Ratio

The summary results of multiple regressions conducted on LTD/TA Ratio at firm level analysis and across industries are presented in Table -7.3 and reveal that:

1. **Size** as measured by Log of TNA and Log of GTFA has significant positive impact on LTD/TA Ratio of overall sample but is not a significant Determinant at industry level. This finding is consistent with the predictions of Tradeoff Theory which says that large firms with tangible assets tend to borrow more.

2. **Profitability** has significant negative impact on LTD/TA Ratio on the overall sample as well as two major industry groups- Chemical and Machinery industry. This result confirms the prediction of Pecking-Order Theory where highly profitable firms prefer to use internally generated funds out of surplus profit to

finance their investments firms and hence resort to lower levels of debt in their Capital Structure.

3. **Collateral** indicators measured in terms of fixed assets like NFA/TNA and GFA/TGA have positive significant impact on LTD/TA Ratio of the overall sample as well as on LTD/TA Ratio of all the three industries. (Nfa+Inv+AR/TNA have significant positive impact on LTD/TA Ratio of overall sample as well as on LTD/TA Ratio of Transport industry. The results indicate that Collaterals in the form of tangible fixed assets support Long Term Debt in all the industries again confirming the Maturity Matching Principle. These results also confirm the predictions of both Pecking Order Theory and Trade-Off Theory.

4. **Volatility** has significant positive impact on LTD/TA Ratio on the overall sample as well as on LTD/TA Ratio of Machinery Industry. These results indicate that FDI Companies in India do not hesitate to borrow debt funds even in case of volatile earnings. They seem to have sufficient internally generated reserves and hence do not face risk of bankruptcy.

5. **Growth rate** does not have any significant impact on LTD/TA Ratio either for overall sample or at industry level analysis

6. **Non Debt Tax Shields** has significant negative impact on overall sample as well as on LTD/TA Ratio of Machinery Industry . The results indicate that in case of Machinery industry, greater tax shields would mean lower debt levels in the industry This result is consistent with the prediction of DeAngelo & Masulis (1980)[3]. Surprisingly the results of simple regression on LTD/TA Ratio indicate positive impact of Non Debt Tax Shields on LTD/TA Ratio. "This can be attributed to the omission of an important variable. On account of this omission, regression may give biased estimate", Maddala G.S (2002)[4]. So in this study when we run simple regression, other important variables are omitted; therefore results of multiple regressions are much more reliable.

7. **Debt Service Capacity** has no significant impact on LTD/TA Ratio of overall sample or at industry level analysis.

Table 7.3					
Summary of Results of Mutiple Regressions on LTD/TA ratio of FDI companies in India					
Independent Variables	Indicators	Overall sample (140 companies)	Chemical Industry (37 companies)	Machinery Industry (38 companies)	Transport Industry (18 companies)
Size	Log of sales	N.S	N.S	N.S	N.S
	Log of TNA	+VE**	N.S	N.S	---
	Log of GTFA	+VE**	N.S	N.S	---
Profitability	PBT/TNA	-VE**	-VE**	-VE*	N.S
	PBITDA/TGA	-VE**	-VE**	-VE**	---
Collateral	NFA/TNA	+VE**	+VE**	+VE**	+VE**
	GFA/TGA	+VE**	+VE**	+VE**	+VE**
	(Nfa+Inv+AR)/TNA	+VE**	N.S	N.S	+VE**
	INV/TNA	---	---	---	---
Volatility	COV of PBIT/ TNA	+VE*	N.S	+VE**	N.S
	SD of PBITDA/TGA	N.S	N.S	+VE**	---
Growth rate	CAGR of TNA	N.S	N.S	N.S	N.S
	CAGR of sales	N.S	N.S	N.S	N.S
NDTS	Depr/TGA	-VE**	---	-VE**	---
Debt Service capacity	PBDIT/INT	N.S	N.S	N.S	N.S
Age	Log of age of firm	-VE**	-VE**	N.S	N.S
Dividend payout	Equity Div/PAT	N.S	-VE*	N.S	N.S
Liquidity	CA/CL	N.S	N.S	N.S	N.S
Net Exports	Net exp/Sales	-VE*	-VE**	-VE**	+VE**
Cost of Equity	DIV/SC	-VE**	---	N.S	---
Uniqueness	R&D/Sales	+VE*	-VE**	N.S	N.S
Cost of Borrowing	INT/DEBT	-VE *	-VE**	N.S	N.S
* indicates significance at 5% level, ** indicates significance at 1% level					
Not Significant=(NS), Positive= (+VE), Negative =(-VE)					
A Dash means -- the indicator is not included in final regression runs					

8. **Age of a firm** has significant negative impact on LTD/TA Ratio for the overall sample as well as on Chemical industry. The results indicate that mature well established firms might not have sufficient growth opportunities, hence might not need long term debt funds. They may also have sufficient built in internal reserves and might not need to borrow long term funds. They may borrow Short Term Debt if required. The positive impact of Age on TC&E/TA Ratio (Table 7.2) confirms this result and indicates that as the firm grows in age, its ability to avail Short Term Trade Credit increases. These results support the Pecking Order Theory.

9. **Dividend Payout** has no significant impact on LTD/TA Ratio of overall sample but has significant negative impact on LTD/TA Ratio of Chemical industry which proves that in case of high dividend payouts, FDI Companies in Chemical industry

resort to Trade Credit and Equivalents as a source of finance (Table 7.2) and prefer to borrow less from Long Term Debt Funds.

10. **Liquidity** has no significant impact on LTD/TA Ratio of overall sample or at industry level analysis.

11. **Net Exports** has significant negative impact on the LTD/TA Ratio of the overall sample as well as on LTD/TA Ratio of Chemical and Machinery industry but had significant positive impact on LTD/TA Ratio of Transport industry. Generally net exporters avail lot of tax concessions and other benefits from the government, hence the incentive to obtain long term debt for its benefit of tax deductibility is not there. Hence, Net Exports have a significant negative impact on Long Term Debt Ratio. At the same time, it has significant positive impact on LTD/TA Ratio of Transport industry which indicates that it is a unique feature peculiar to this particular industry. It might be possible that those companies who are Net Exporters in Transport industry require huge investments in assets and hence need more funds to finance these assets, which they borrow from long term sources.

12. **Cost of Equity** has significant negative impact on LTD/TA Ratio of the overall sample but is not a significant Determinant of LTD/TA Ratio at industry level analysis. The results indicate that even if Cost of Equity rises, FDI Companies do not prefer to borrow from Long Term Debt sources.

13. **Uniqueness** of a firm has significant positive impact on LTD/TA Ratio of overall sample. A unique firm which is incurring huge expenditures on research and development needs funds to finance these expenditures and these firms rely on long term debt for their financing requirements. At the same time, Uniqueness has significant negative impact on Long Term Debt Ratio of Chemical industry indicating that unique FDI Companies in Chemical industry would borrow less from Long Term Debt sources. It might also be possible that these unique firms in Chemical industry might be facing difficulty in borrowing from Long Term Debt sources.

14. **Cost of Borrowing** has significant negative impact on LTD/TA Ratio of overall sample as well as on LTD/TA Ratio of Chemical industry. The results indicate that as the Cost of Borrowings rise, companies prefer to borrow less from Long Term Debt Funds and especially meet their financing requirements by availing Short Term Trade Credit (Refer Table 7.2) rather than borrowing from Long Term Debt sources.

7.3.4.4 Results of Multiple regression on TL/TA Ratio

TL/TA Ratio is the broadest debt measure and includes all the Debt Sources, Short Term and Long Debt Sources Including Current Liabilities and Provisions. The summary results of multiple regressions conducted on TL/TA Ratio at firm level analysis and across industries are presented in Table -7.4 and reveal that:

1. **Size** as measured by Log of sales has significant positive impact on TL/TA Ratio of overall sample but was not a significant predictor of TL/TA Ratio of the three selected industry groups. The positive impact on TL/TA Ratio is due to the fact that a major proportion of Total Liabilities come from Short Term Debt Funds, especially Trade Credits and Equivalents and since Size has positive impact on Short Term Debt Funds, especially on Trade Credits and Equivalents (Table 7.2), hence the positive impact even on TL/TA Ratio.

2. **Profitability** has significant negative impact on TL/TA Ratio on the overall sample as well as all the three industry groups confirming that FDI Companies do follow Pecking Order Theory.

3. **Collaterals indicator -** (Nfa+Inv+AR)/TNA has significant positive impact on TL/TA Ratio of overall sample as well as on TL/TA Ratio of Machinery industry and Transport industry. **Collateral** indicator INV/TNA has significant positive impact on overall sample as well as on Transport industry. Since Total Liabilities include all the Debt sources-- both Short Term and Long Term, along with Fixed Assets; Inventories and Accounts Receivable also become important Determinants of TL/TA Ratio. Hence the indicator (Nfa+Inv+AR)/TNA has significant positive impact on TL/TA Ratio.

4. **Volatility** has significant positive impact on TL/TA Ratio of the overall sample as
well as on TL/TA Ratio of Machinery Industry. This indicates that inspite of fluctuations in profits; FDI Companies continue to borrow. This also indicates that these companies have already built in sufficient reserves in the form of retained profits which they used to repay the loans whenever they have insufficient cash flows.

5. **Growth Rate** as measured by CAGR of Sales and CAGR of TNA has significant positive impact on TL/TA Ratio for the overall sample but is not a significant predictor of TL/TA Ratio at industry level.

6. **Non Debt Tax Shields** has no significant impact on TL/TA Ratio of overall sample or at industry level analysis.

7. **Debt Service Capacity** has no significant impact on TL/TA Ratio of overall sample or at industry level analysis.

8. **Age of a firm** has no significant impact on TL/TA Ratio of overall sample or at industry level analysis.

9. **Dividend Payout** has no significant impact on TL/TA Ratio of overall sample or at industry level analysis.

10. **Liquidity** is a significant predictor of TL/TA Ratio and has significant negative impact on the overall sample as well as on Chemical and Transport Industry. This again might be due to the fact that a major contribution to Total Liabilities comes from Short Term Debt Funds and Trade Credits and hence if there is sufficient Liquidity, the company may need to borrow less from these sources. Hence the negative impact of Liquidity on TL/TA Ratio.

11. **Net Exports** have no significant impact on TL/TA Ratio of overall sample or at industry level analysis.

Table 7.4					
Summary of Results of Mutiple Regressions on TL/TA ratio of FDI companies in India					
Independent Variables	Indicators	Overall sample (140 companies)	Chemical Industry (37 companies)	Machinery Industry (38 companies)	Transport Industry (18 companies)
Size	Log of sales	+VE**	N.S	N.S	N.S
	Log of TNA	---	---	---	---
	Log of GTFA	---	---	---	---
Profitability	PBT/TNA	-VE**	-VE**	-VE*	-VE**
	PBITDA/TGA	---	---	---	---
Collateral	NFA/TNA	N.S	N.S	---	N.S
	GFA/TGA	---	---	---	---
	(Nfa+Inv+AR)/TNA	+VE**	N.S	+VE**	+VE**
	INV/TNA	+VE**	---	N.S	+VE**
Volatility	COV of PBIT/ TNA	+VE**	N.S	+VE**	N.S
	SD of PBITDA/TGA	---	---	---	---
Growth rate	CAGR of TNA	+VE*	N.S	N.S	N.S
	CAGR of sales	+VE*	---	---	---
NDTS	Depr/TGA	---	---	---	---
Debt Service capacity	PBDIT/INT	---	---	---	---
Age	Log of age of firm	N.S	N.S	N.S	N.S
Dividend payout	Equity Div/PAT	N.S	N.S	N.S	
Liquidity	CA/CL	-VE**	-VE**	N.S	-VE*
Net Exports	Net exp/Sales	N.S	N.S	N.S	N.S
Cost of Equity	DIV/SC	+VE**	+VE*	---	N.S
Uniqueness	R&D/Sales	N.S	N.S	N.S	N.S
Cost of Borrowing	INT/DEBT	-VE **	N.S	N.S	N.S
* indicates significance at 5% level, ** indicates significance at 1% level					
Not Significant=(NS), Positive= (+VE), Negative =(-VE)					
A Dash means -- the indicator is not included in final regression runs					

12. **Cost of Equity** has significant positive impact on TL/TA Ratio of the overall sample and on TL/TA Ratio of Chemical industry. This might also be due to the fact that a major proportion of Total Liabilities come from Short Term Debt and Current Liabilities and when Cost of Equity increases, companies prefer Short Term Debt Funds as observed in Table 7.1 and 7.2. Since increase in Cost of Equity had a negative impact on LTD/TA Ratio (Table7.3), the results confirm the belief that when Cost of Equity increases, FDI Companies in India either resort to Short Term Borrowings or prefer Internal Funds but do not resort to Long Term Debt Funds.

13. **Uniqueness** has no significant impact on TL/TA Ratio of overall sample or at industry level analysis.

14. **Cost of Borrowing** has significant negative impact on TL/TA Ratio of the overall sample but is not a significant Determinant of TL/TA Ratio at industry level analysis.

7.4 Implications of the Study

- The simple regression and multiple regression results indicate that significant differences exist in Determinants of Short Term Debt, Long Term and Total Debt Ratios of FDI Companies in India. Differences in Determinants also exist if the FDI Companies are categorized according to their affiliation of a particular industry.

- The results of multiple regressions of overall sample indicate that Collaterals in the form of Fixed Assets have negative impact on Short Term Debt Ratios but have positive impact on Long Term Debt Ratios. Age has positive impact on Short Term Debt Ratio – TC&E/TA but has negative impact on Long Term Debt Ratio-LTD/TA. Cost of Equity and Cost of Borrowings have positive impact on Short Term Debt Ratios but have negative impact on Long Term Debt Ratio. Uniqueness of a firm has negative impact on TC&E/TA Ratio but has positive impact on Long Term Debt Ratio.

- In case of multiple regressions conducted in industry-wise analysis on STD1/TA Ratio, it is observed that Volatility has positive impact on STD1/TA Ratio of Machinery industry only.

- In case of multiple regressions conducted in industry-wise analysis on TC&E/TA Ratio, it is observed that Profitability has negative impact on TC&E/TA Ratio of Machinery industry only. Size has positive impact on TC&E/TA Ratio of Chemical industry only. Collaterals in the form of Inventories have positive impact on TC&E/TA Ratio of Transport industry only. Volatility has positive impact on TC&E/TA Ratio of Chemical and Machinery industry but has negative impact on TC&E/TA Ratio of Transport industry. Age has positive impact on TC&E/TA Ratio of Chemical industry only. Dividend Payout has positive impact on Chemical industry but has negative impact on Transport industry.

- In case of multiple regressions conducted in industry-wise analysis on LTD/TA Ratio, Profitability has significant negative impact on Chemical and Machinery industry but was not a significant predictor of LTD/TA Ratio of Transport industry. Volatility has significant positive impact on LTD/TA Ratio of Machinery industry only. NDTS has significant negative impact on LTD/TA Ratio of Machinery industry only. Age, Dividend Payout, Uniqueness and Cost of Borrowings have negative impact on LTD/TA Ratio of Machinery industry only.

- In case of multiple regressions conducted in industry-wise analysis on TL/TA Ratio, Collaterals indicator Nfa+Inv+AR/TNA had positive impact on Machinery and Transport industry but not on Chemical industry. INV/TNA had positive impact on TL/TA Ratio of Transport industry only. Liquidity had negative impact on TL/TA Ratio of Chemical and Transport Industry but not on Machinery industry. Cost of Equity has positive impact on TL/TA Ratio of Chemical industry only.

- One of the most important observations is that FDI Companies in India do not prefer to issue equity and consider equity as the last financing choice. They believe in meeting most of their financing requirements through internally generated funds. Another important observation is that FDI Companies in India do not seem to increase their proportion of Long Term Debt under any circumstances as is seen by the declining trends in composition of financing mix. The companies either borrow from Short Term Funds or use internally generated funds but do not increase their proportion of Long Term Debt in their financing mix. They seem to keep their Long Term Debt levels within reasonable limits and also seem to maintain a target leverage range which they try to maintain by either switching to very Short Term Debt funds like Trade Credit or using internally generated funds. This means that the financing behavior of FDI Companies in India confirm to both **Pecking Order Theory** predictions well as **Trade-Off Theory** as these companies prefer internal funds over external funds but at the same time try to maintain their Long Term Debt levels within a target range confirming to predictions of Tradeoff theory, especially dynamic version of Trade-Off Theory. It can be concluded that both the theories- Trade-Off Theory and the Pecking Order Theory are not mutually exclusive and both seem to in a way to explain the financing behavior of FDI Companies in India.

- A major inference which can be drawn from the study in the context of FDI Companies in India is that the term Capital Structure should not be restricted to the Long Term Debt-Equity Mix alone. The use of variety of Debt Measures in this study has given a new perspective to the term Capital Structure, as it is found out that 'Capital Structure' and 'Financial Structure' policies of FDI Companies in India cannot be differentiated as a major proportion of finance of these companies is provided by Short Term Debt Funds, especially Current Liabilities. If Short Term Debt sources and Non-Interest Bearing Debt sources are not included in study of Capital Structure decision, a proper perspective of actual Determinants of Capital Structure would not be obtained.

7.5 Limitations of the Study

The following are the limitations of the study:

1. Capital Structure of a firm in any country might also be affected by the presence of macroeconomic factors like the tax code, bankruptcy laws, GDP growth, inflation rate, exchange rate, industrial growth, level of exports and imports, forex reserves, efficiency of financial markets, legal and regulatory environment etc. The impact of these factors on Capital Structure of companies in a particular country can be deliberated upon in better way if some comparison can be made of the impact of these factors on Capital Structure of firms belonging to different countries. As macroeconomic factors affecting Capital Structure decisions of FDI Companies in India have not been considered in this study, this might be one of the limitations of the study.

2. The study employs book value debt measures. Market value leverage measures have not been employed in the study due to data limitations which would have provided more inputs.

3. The Determinants of Capital Structure of FDI Companies belonging to certain industries could not be studied in detail as the number of companies falling in these industry categories was not sufficient enough to allow carrying out multiple regressions as it would have meant insufficient degrees of freedom for conducting multiple regressions.

7.6 Suggestions and Scope for Further Research

1. Further research on Capital Structure can be attempted using a larger database with inclusion of market based Capital Structure leverage measures along with book leverage measures. An important area of further research would be comparison of Determinants of Capital Structure of FDI Companies in India with Determinants of Capital Structure of domestic companies in India which do not have any share of FDI flows. This might provide further insights into Determinants playing an important role in determining Capital Structure of FDI Companies as compared to Determinants of Capital Structure of domestic companies in India.

2. Another area of further research would be comparison of Determinants of Capital Structure of FDI Companies in India with FDI Companies in China and other South East Asian countries which are major attractive FDI destinations. This type of study can also incorporate impact of macroeconomic factors on Capital Structure decisions of FDI Companies from the selected countries.

3. Survey evidence on Capital Structure choice of FDI Companies in India can be conducted on managers of these companies to investigate into reasons of a choice of a particular Capital Structure strategy, if any, and also to find out the effect of corporate governance on Capital Structure.

4. Other measurement techniques like factor analytic model or dynamic panel data measurement models may be applied in further research work on Capital Structure practices.

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Appendix- I

Industry - Wise List of 140 sample FDI Companies in India

Food Industry (11 Companies)

Sr. No	Company Name	FP(%)*
1	Agro Tech Foods Ltd.	48.11
2	Britannia Industries Ltd.	50.95
3	Dharani Sugars & Chemicals Ltd.	18.70
4	Glaxosmithkline Consumer Healthcare Ltd.	43.16
5	Godfrey Phillips India Ltd.	35.93
6	Goodricke Group Ltd.	74.00
7	Harrisons Malayalam Ltd.	19.72
8	Lotte India Corpn. Ltd.	80.39
9	Nestle India Ltd.	61.85
10	V S T Industries Ltd.	32.16
11	Warren Tea Ltd.	59.08

Chemical Industry (37 Companies)

Sr. No	Company Name	FP(%)*
12	Abbott India Ltd.	65.14
13	Acrysil Ltd.	19.38
14	Albright & Wilson Chemicals India Ltd.	72.93
15	Astrazeneca Pharma India Ltd.	90.00
16	Aventis Pharma Ltd.	50.12
17	B A S F India Ltd.	52.69
18	Bayer Cropscience Ltd.	69.45
19	Caprihans India Ltd.	51.00
20	Castrol India Ltd.	71.03
21	Chennai Petroleum Corpn. Ltd.	15.40
22	Cipla Ltd.	21.45
23	Clariant Chemicals (India) Ltd.	63.4
24	Colgate-Palmolive (India) Ltd.	51.00
25	D I C India Ltd.	65.76
26	Elantas Beck India Ltd.	88.55
27	Essel Propack Ltd.	21.91
28	Foseco India Ltd.	66.48
29	Fulford (India) Ltd.	50.77
30	Goodyear India Ltd.	74.00
31	Gulf Oil Corpn. Ltd.	49.03
32	Haryana Leather Chemicals Ltd.	15.66
33	Hindustan Unilever Ltd.	51.42
34	I C I India Ltd.	50.83
35	India Gelatine & Chemicals Ltd.	22.30
36	Kansai Nerolac Paints Ltd.	64.52

FP(%)* - Foreign Promoters (%Share in Equity Holding as on 31/03/2007)

Continued on next page.....

Appendix- I Continued ...		
Industry wise list of 140 sample FDI companies in India		
Chemical Industry (37 Companies)		
Sr. No	**Company Name**	**FP(%)***
37	Machino Plastics Ltd.	15.35
38	Merck Ltd.	51.00
39	Monsanto India Ltd.	72.15
40	National Peroxide Ltd.	26.09
41	Nitta Gelatin India Ltd.(Earlier Kerala Chemicals & proteins Ltd.)	46.43
42	Novartis India Ltd.	50.93
43	Paper Products Ltd.	58.92
44	Pfizer Ltd.	41.23
45	Procter & Gamble Hygiene & Health Care Ltd.	68.73
46	Uniproducts (India) Ltd.	61.00
47	Venlon Enterprises Ltd.	70.5
48	Wyeth Ltd.	51.12
Machinery Industry (38 Companies)		
Sr. No	**Company Name**	**FP(%)***
49	A B B Ltd.	52.11
50	Alfa Laval (India) Ltd.	64.1
51	Areva T & D India Ltd.	66.65
52	Atlas Copco (India) Ltd.	83.77
53	Avaya Globalconnect Ltd.	59.13
54	Avery India Ltd.	53.44
55	Cummins India Ltd.	51.00
56	Disa India Ltd.	74.27
57	Easun Reyrolle Ltd.	10.01
58	Eimco Elecon (India) Ltd.	25.10
59	Esab India Ltd.	37.31
60	Exide Industries Ltd.	48.87
61	F A G Bearings India Ltd.	51.33
62	F C I Oen Connectors Ltd.	68.31
63	G M M Pfaudler Ltd.	51.00
64	Honda Siel Power Products Ltd.	66.67
65	Honeywell Automation India Ltd.	81.24
66	Ingersoll-Rand (India) Ltd.	74.00
67	Integra Hindustan Control Ltd.	25.50
68	K S B Pumps Ltd.	40.54
69	Krone Communications Ltd.	51.00
70	Nippo Batteries Co. Ltd.	40.00
71	Panasonic Carbon India Co. Ltd.	51.00
72	Panasonic Energy India Co. Ltd.	51.00
FP(%)* - Foreign Promoters (%Share in Equity Holding as on 31/03/2007)		
Continued on next page.....		
Appendix- I Continued ...		

Appendix- I Continued ...		
Industry wise list of 140 sample FDI companies in India		
Machinery Industry (38 Companies)		
Sr. No	Company Name	FP(%)*
73	Panasonic Home Appliances India Co. Ltd.	50.99
74	Ruttonsha International Rectifier Ltd.	41.62
75	S K F India Ltd.	53.58
76	Schlafhorst Engineering (India) Ltd.	53.78
77	Sharp India Ltd.	80.00
78	Siemens Healthcare Diagnostics Ltd.(Earlier Siemens Medical solutions Diagnostics Ltd.)	32.67
79	Singer India Ltd.	49.64
80	Stovec Industries Ltd.	51.00
81	Sulzer India Ltd.	80.00
82	U T Ltd.	12.16
83	Wartsila India Ltd.	96.58
84	Wendt (India) Ltd.	39.87
85	Whirlpool Of India Ltd.	82.33
86	Yokogawa India Ltd.	95.29
Transport (18 Companies)		
Sr. No	Company Name	FP(%)*
87	Ashok Leyland Ltd.	38.80
88	Banco Products (India) Ltd.	35.61
89	Bharat Seats Ltd.	14.81
90	Hinduja Foundries Ltd.(Earlier Ennore Foundaries Ltd.)	59.1
91	Hero Honda Motors Ltd.	26.00
92	India Nippon Electricals Ltd.	20.52
93	Lumax Industries Ltd.	19.41
94	Maruti Suzuki India Ltd.	54.21
95	Bosch Ltd (Earlier Motor industries Ltd.)	60.55
96	Munjal Showa Ltd.	26.00
97	Rane Holdings Ltd.	28.88
98	Remy Electricals India Ltd.	47.51
99	Schrader Duncan Ltd.	50.00
100	Sona Koyo Steering Systems Ltd.	20.10
101	Sundaram-Clayton Ltd.	39.17
102	Wheels India Ltd.	35.91
103	Yuken India Ltd.	40.00
104	Z F Steering Gear (India) Ltd.	25.79
FP(%)* - Foreign Promoters (%Share in Equity Holding as on 31/03/2007)		
Continued on next page.....		

Appendix- I Continued		
Industry wise list of 140 sample FDI Companies in India		
Services Industry (14 Companies)		
Sr. No	Company Name	FP(%)*
105	Aegis Logistics Ltd.	44.60
106	Asian Hotels Ltd.	46.81
107	Chowgule Steamships Ltd.	10.38
108	Crisil Ltd.	51.63
109	E I H Associated Hotels Ltd.	22.27
110	F G P Ltd.	36.70
111	Gujarat Gas Co. Ltd.	65.12
112	Muller & Phipps (India) Ltd.	51.63
113	O R G Informatics Ltd.	22.20
114	Sical Logistics Ltd.	48.78
115	T I L Ltd.	19.84
116	Tech Mahindra Ltd.	39.31
117	Thomas Cook (India) Ltd.	61.78
118	Williamson Financial Services Ltd.	28.07
Metal & Metal products Industry (06 Companies)		
Sr. No	Company Name	FP(%)*
119	De Nora India Ltd.	51.29
120	Ferro Alloys Corpn. Ltd.	41.88
121	Gillette India Ltd.	41.02
122	Ispat Industries Ltd.	32.66
123	Sterlite Industries (India) Ltd.	72.29
124	Tayo Rolls Ltd.	12.06
Non metallic minerals industry (05 Companies)		
Sr. No	Company Name	FP(%)*
125	Ambuja Cements Ltd.	27.85
126	Asahi India Glass Ltd.	25.41
127	Grindwell Norton Ltd.	51.33
128	H E G Ltd.	29.4
129	Morganite Crucible (India) Ltd.	76.00
FP(%)* - Foreign Promoters (%Share in Equity Holding as on 31/03/2007)		

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Appendix- I Continued		
Industry wise list of 140 sample FDI companies in India		
Miscellaneous Manufacturing Industry (05 Companies)		
Sr. No	**Company Name**	**FP(%)***
130	Bata India Ltd.	51.02
131	I S T Ltd.	49.95
132	Macmillan India Ltd.	61.46
133	Seshasayee Paper & Boards Ltd.	13.76
134	South India Paper Mills Ltd.	13.53
Textiles Industry (03 Companies)		
Sr. No	**Company Name**	**FP(%)***
135	Indian Card Clothing Co. Ltd.	57.35
136	Indo Rama Synthetics (India) Ltd.	33.57
137	R S W M Ltd.	21.32
Construction Industry (02 Companies)		
Sr. No	**Company Name**	**FP(%)***
138	Aban Offshore Ltd.	22.54
139	I T D Cementation India Ltd.	80.48
Mining Industry (01 Company)		
140	Sesa Goa Ltd.	51.00
FP(%)* - Foreign Promoters (%Share in Equity Holding as on 31/03/2007)		

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Sept.27, 2010

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Sub: Acceptance of Article.

Dear Sir,

We have received your article on "Capital Structure Trends of Foreign Direct Investment Companies in Chemical Industry & Machinery Industry in India" and the same is accepted for publication in our subsequent issue of 'AIMS- A JOURNAL OF MANAGEMENT SCIENCES" which will be published Soon.

Thanking you,

Yours truly,

(Dr. N.S. Rao)
Chief Editor

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