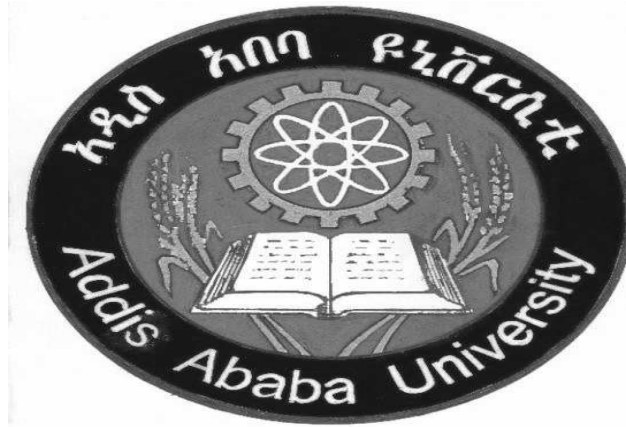


**The determinants of capital structure evidence from manufacturing share
companies of Addis Ababa city.**



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June 2011.

**The determinants of capital structure evidence from manufacturing share
companies of Addis Ababa city.**

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**June, 2011
Addis Ababa, Ethiopia**

The determinants of capital structure evidence from manufacturing share companies of Addis Ababa city.

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Declaration

I, Amanuel Mekonnen Workneh, hereby declare that the thesis work entitled “The Determinants of capital structure evidence from manufacturing share companies of Addis Ababa city, Ethiopia” submitted by me for the award of the degree of Master of Accounting and Finance of Addis Ababa University at Addis Ababa Ethiopia, is original work and it hasn't been presented for the award of any other Degree, Diploma, Fellowship or other similar titles of any other university or institution.

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CERTIFICATION

I certify that the thesis work entitled “The Determinants of capital structure evidence from manufacturing share companies of Addis Ababa city, Ethiopia” is a genuine work of Mr. Amanuel Mekonnen who carried out the research under my guidance. Certified further, that to the best of my knowledge the work reported herein doesn't form part of any other project report or dissertation on the bases of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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Abstract

Capital structure decisions are among the most important and crucial decisions for any business because of their effect on the value and cost of the company. In this paper, an attempt has been made to examine the relevance of theoretical internal (firm level) factors determine capital structure of manufacturing share companies in Addis Ababa, Ethiopia. To seek answers to these questions, seven explanatory variables; tangibility, non-tax shields, growth, earning volatility, profitability, age and size of the firm were regressed against the dependent variables of total debt ratio, short term ratio and long term debt ratio. In connection of this, a sample of 12 companies were take and secondary data was collected from audited financial statements of selected companies for the period of five years (1996-2002EC). Stratified sampling design was employed and companies were selected based on simple random to represent different industry sectors (strata) within manufacturing share companies. Data was then analyzed on quantitative basis using multivariate OLS regression.

The results show that tangibility, non debt tax shields, earning volatility, profitability, and size of the firm variables are the significant determinants of capital structure of Addis Ababa manufacturing share companies at least one out of the three models for capital structure employed in the study. While no clear and statistical proved relation are obtained for the variables growth of the firm and age of the firm in any of the capital structure models.

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ACRONYMS

A	Age
ERCA	Ethiopian Revenues and Customs Authority
EV	Earnings Volatility
FA	Fixed Assets
G	Growth
GTA	Percentage Change in Total Assets
ln S	Natural Logarithm of Assets
LTDR	Long-Term Debt Ratio
MM	Modigliani and Miller
MOFED	Ministry of Finance and Economic Development
NDTS	Non-Debt Tax Shields
OLS	Ordinary Least Squares
P	Profitability
S	Size
SDOI	Standard Deviation of Operating Income
SE	Selling Expenses
STD	Short-Term Debt
T	Tangibility
TA	Total Assets
TD	Total Debt
U	Uniqueness

Chapter 1

Back ground of the study

The determination of capital structure has been one of the most contentious issues in the finance literature since Modigliani and Miller introduced their capital structure irrelevance propositions in their seminal article in 1958. Since then, several theories have been developed suggesting a number of factors that might determine a firm's capital structure decision. However, out of these theories of capital structure, two models appear to come across strongly. One of them is the trade-off theory, which assumes that there are benefits and costs associated with the use of debt. In the beginning, the theory was limited to the trade off between the tax advantages of debt and bankruptcy costs. Then, it was extended to include benefits and costs of debt associated with agency conflicts. The other main theory is the pecking order hypothesis which assumes that, under information asymmetry between insiders and outsider, firms will resort to internally generated funds first to finance their growth, but when external financing is needed, firms prefer to raise debt before equity.

Empirically, numerous studies have been conducted to investigate the determinants of capital structure on the basis of these two theories. However, neither trade-off theory nor the pecking order hypothesis has found to provide robust and exclusive explanatory power. Nevertheless, Harris and Raviv (1991) conclude that it is necessary that empirical research be directed to test determinants of capital structure in various contexts.

Research on the determinants of capital structure was initially directed mainly to firms in the developed countries. One of the classical researches was carried out by Titman and Wessels (1988); where they studied the theoretical determinants of capital structure the

theoretical attributes namely; asset structure, non-debt tax shields, growth, uniqueness, industry classification, firm size, earnings volatility and profitability were tested to see how they affect a firm's choice of debt-equity mix. To broaden the understanding of capital structure models, Rajan and Zingales (1995) have attempted to find out whether the capital structure choices in other countries are made based on factors that similar to those capital structure influencing ones in U.S firms. Four factors; tangibility of assets, growth, size of the firm and profitability were tested to see their influences on leverage.

However, there were not many research directed towards developing countries that saw the applicability of the theories of capital structure developed from the developed nations. Booth et al. (2001), Maghyereh (2005), Amidu (2007), Abor (2008), and Bas et al. (2009) were among the scholars who have studied the capital structure issues in the developing nations. The determinants of capital structure of Ethiopian firms are still in under-explored areas in the literature of financing decision. As to the researcher knowledge, the study conducted on determinants of capital structure so far in Ethiopian case are by Ashenafi (2005) and Mintesinot (2010). Therefore, the purpose of the paper is to show the determinants of capital structure in Ethiopia, Addis Ababa by taking sample from manufacturing share companies.

1.1 Statement of the problem

The capital structure decision is one of the most important decisions made by financial managers in this modern era. The capital structure decision is at the center of many other decisions in the area of corporate finance. One of the many objectives of a corporate financial manager is to ensure low cost of capital and thus maximize the wealth of

shareholders. Hence, capital structure is one of the effective tools of management to manage the cost of capital. An optimal capital structure is reached at a point where the cost of the capital is minimal (Gitman 2009).

Most capital structure studies to date are based on data from developed countries. For example, Rajan and Zingales (1995) use data from the developed countries, Bevan and Danbolt (2000 and 2002) utilize data from the UK, Antoniou et al, (2002) analyze data from the UK, Germany, and France and Hall et al, (2004) used data from European small and medium enterprises. There are few studies that provide evidence from developing countries, for example Booth et al, (2001) analyze data from ten developing countries (Brazil, Mexico, India, South Korea, Jordan, Malaysia, Pakistan, Thailand, Turkey and Zimbabwe), Pandey (2001) uses data from Malaysia, Chen (2004) utilize data from China, Omet and Nobanee (2001) use data from Jordan and Al-Sakran (2001) analyses data from Saudi Arabia. Of the capital structure studies, some have used cross-country comparisons based on data from particular region. For example, Deesomsak et al, (2004) analyze data from the Asia Pacific region. In Ethiopia as to the knowledge of the researcher there were few papers which relates with this title these are Ashenafi (2005) a case study in Addis Ababa Small and Medium enterprises and Mintesinot (2010) a case study in private limited manufacturing companies in Tgray region. This study attempted to reduce the gap by analyzing a capital structure question in Ethiopian companies context specifically manufacturing share companies in Addis Ababa city. The study on determinants of capital structure in Ethiopian case is unique from the previously studied cases in developed as well as developing countries in that, first Ethiopia does not have

modern financial markets that provide wide ranging functions, and secondly intense empirical investigations have not made yet pertaining to Ethiopian context particularly in manufacturing share companies. However, this does not mean that the capital structure theories developed and tested in developed countries with well developed capital markets have no implication to developing countries that lack secondary markets.

In connection with this, Booth et al (2001) gave explanations with regard to relevance of firm level attributes explaining variations in usage of financial leverage across firms in developing countries, which states that: “In general, debt ratios in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries. However, there are systematic differences in the way these ratios are affected by country factors, such as GDP growth rates, inflation rates, and development of capital markets.” This paper, therefore, provides further evidence to the capital structure theories pertaining to Ethiopia, a developing country that lacks a secondary capital market, by identifying the factors determining the financing choices (capital structure) of manufacturing share companies.

1.2 Objectives of the study

The primary objective of this study is to understand the relevance of the theoretical internal (firm level) factors determining capital structure in explaining the differences in the capital structures of manufacturing share companies in Addis Ababa and to know which of the theories of capital structure are appealing to Ethiopian manufacturing share industry.

1.2.1. Specific Objectives

The specific objectives that this study tried to find evidence for are: -

- (1) To determine the consequence of alteration in the tangibility of assets held by manufacturing enterprises of Addis Ababa on leverage ratios;
- (2) To identify how the change in non-debt tax shields affects different debt ratio measures of Ababa's manufacturing companies; and,
- (3) To determine the reaction of debt ratios to changes in growth of manufacturing enterprises;
- (4) To verify the significance of earnings volatility in resulting differences in manufacturing companies' capital structure;
- (5) To recognize the response of capital structure to age differences across manufacturing share companies in Addis Ababa city;
- (6) To measure the effect of change in profitability on the financing mix of manufacturing companies in Addis Ababa, Ethiopia;
- (7) To find out to what extent the variations in size explains the variations in financing options of players in manufacturing sector in Ethiopia;
- (8) To prove if capital structure decisions that are made in the manufacturing firms in Addis Ababa, Ethiopia provide empirical support for existing financial theories.

1.3. The hypothesis and model specification

1.3.1. Hypothesis

Both theoretical and empirical capital structure studies have generated many results that attempt to explain the determinants of capital structure. As a result of these studies, some broad categories of capital structure determinants have emerged. Titman and Wessels (1988), and Harris and Raviv (1991), however, point out that the choice of suitable explanatory variables is potentially contentious.

In this study, to identify which of the capital structure theories is relevant in the Ethiopian context, the researcher concentrated only on seven key variables because of the time constraints. These explanatory variables are: tangibility, non-tax shields, growth, earning volatilities, age, profitability, and size. Out of these seven variables four explanatory variables (Tangibility, size, profitability and growth) are identified as important factors in the G-7 countries (Rajan and Zingales, 1995), as well as in ten developing countries (Booth et al., 2001). Based on the above information the following seven hypotheses tested throughout the proposed study. As pointed out by Buferna et al, (2005) and Titman and Wessels (1988), that capital structure studies examining the determinants of leverage based on total debt may disguise the significant differences between long-term and short-term debt. Therefore, in line with Buferna et al (2005) and Titman and Wessels (1988), this study decomposed debt into long-term and short-term debt. The debt ratios that shall be considered are: Total Debt to Total Assets, Short-Term Debt to Total Assets, and Long-Term Debt to Total Assets. The developed hypotheses and their rationale are discussed below.

1. Tangibility

The value of tangible assets is associated with higher debt capacity. Myers (1984) suggests that issuing debt secured by collateral may reduce the asymmetric information related costs in financing. Hence, debt secured by collateral may mitigate asymmetric information related cost in financing. Therefore, a positive relationship between tangibility and financial leverage is expected in relation to the study. Static trade off theory and pecking order theory also suggested a positive relationship between tangibility and leverage. The following hypothesis is formulated based on the rationale stated above.

Hypothesis 1: There is a positive relationship between leverage ratios and tangibility.

The proxy for the collateral value attribute to be applied in this study is the ratio of fixed assets to total asset (FA/TA).

2. Non-debt tax shields

Tax deductions for depreciation and investment tax credits are substitutes for the tax benefits of debt financing (De Angelo and Masulis, 1980). As a result, firms with large non-debt tax shields relative to their expected cash flow include less debt in their capital structures. The following hypothesis is formulated based on the rationale stated above.

Hypothesis 2: There is a negative relationship between leverage ratios and non-debt tax shields.

Indicator of non-debt tax shields in the research was the ratio of total depreciation expense over total assets (TD/TA).

3. Growth

The relationship between growth opportunities and the debt ratio is also quite conflicting. The Trade-off theory predicts that firms with more growth opportunities will have less debt as there is less need for the role of debt. Firms that have growth opportunities would prefer to retain debt capacity as they might need to borrow in the future. Further, growth opportunities are capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income (Titman and Wessels, 1988). For this reason, the arguments put forth suggest a negative relationship between debt and growth opportunities.

However, Benito (2003) proposes the opposite. If firms have growth opportunities, then they require more funds to grow. Given that internal resources are not sufficient, firms would then turn to external sources of finance, which would lead to a higher debt level in firms. Based on the above rationale, the following hypothesis is formulated:

Hypothesis 3: There is a positive relationship between leverage ratios and growth.

The growth of total assets measured by the percentage change in total assets (GTA) will be used as indicator of Growth attribute.

4. Earning volatility

As stated by Titman and Wessels (1988), various studies in different countries suggest that a firm's optimal debt level is inversely related to the volatility of earnings. Based on the above rationale, the following hypothesis is formulated:

Hypothesis 4: There is a negative relationship between leverage ratios and earnings volatility.

The standard deviation of the first difference in annual earnings over mean of the earning is applied as a proxy for risk or earning volatility.

5. Age of the firm

Age of the firm is a standard measure of reputation in capital structure models. As a firm continues longer in business, it establishes itself as an ongoing business and therefore increases its capacity to take on more debt; hence age is positively related to debt (Abor, 2008). As firms become aged, the long years of track record will enable them to easily convince creditors.

In addition experience enables the firm expertise in finding alternative credit source cost effectively or in favorable terms when going for debt capital. This induces a positive relationship between leverage ratios and age of the firm.

Hypothesis 5: There is a positive relationship between leverage ratios and age.

There is only one type of indicator for age it is the number of years of stay in business.

6. Profitability

The following hypothesis is formulated for profitability based on rationale below.

Profitability is a strong point of dissent between the two theories of capital structure i.e. Pecking Order Theory and Static Tradeoff Theory. For the static trade-off theory, the higher the profitability of the firm, the more are the reasons it will have to issue debt, reducing its tax burden.

On the other hand, the pecking order theory assumes that larger earnings lead to the increase of the main source of capital firms choose to cover their financial deficit:

retained earnings. Therefore, the static trade-off theory expects a positive relationship between profitability and leverage, whereas the pecking order theory expects exactly the opposite.

Hypothesis 6: There is a negative relationship between leverage ratios and profitability.

Profitability will be measured as the ratio of earnings before interest and taxes (operating profit) to total assets.

7. Size

Size is likely to be positively correlated with leverage, since direct bankruptcy costs appear to constitute a larger proportion of a firm's value as that value decreases (Titman and Wessels, 1988). It is also the case that relatively large firms intend to be more diversified, have greater access to debt markets and less prone to bankruptcy therefore there is a tendency of being more leveraged as size increases, according to Trade-off and Agency Cost theories.

Hypotheses 7: There is a positive relationship between leverage ratios and size.

The natural logarithm of assets ($\ln A$) is selected as the indicator for size variable in the research.

1.3.2. Model specification

The model is derived on the basis of previous studies such as Ozkan (2001), Bevan and Danbolt (2000) and Titman and Wessels (1988). The chosen model is strongly believed to capture the essence of the subject under study. The following three models are specified based on the relation outlined in the hypothesis.

Model for Total Debt Ratio

$$\begin{aligned} \text{Total Debt Ratio (TDR)} = & \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] \\ & - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it} \end{aligned}$$

Model for Short Term Debt Ratio

$$\begin{aligned} \text{Short Term Debt Ratio (STDR)} = & \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] \\ & - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it} \end{aligned}$$

Model for Long Term Debt Ratio

$$\begin{aligned} \text{Long Term Debt Ratio (LTDR)} = & \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] \\ & - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it} \end{aligned}$$

Where:

- TDR = Total Debt Ratio
- STDR = Short Term Debt Ratio
- LTDR = Long Term Debt Ratio
- β_1 = Coefficient of Intercept,
- β_2 = Coefficient of Tangibility,
- β_3 = Coefficient of Non-debt tax shields,
- β_4 = Coefficient of Growth,
- β_5 = Coefficient of , Earnings Volatility
- β_6 = Coefficient of Age,
- β_7 = Coefficient of profitability, and
- β_8 = Coefficient of size,
- T_{it} =Tangibility for “i” company at time “t”= Fixed Asset/Total Asset
- NDTS_{it} =Non-debt tax shields for“i” company at time “t”= Depreciation/Total Asset

- G_{it} =Growth= $[TAt-TAt-1]/ TAt-1$
- EV_{it} =Earnings Volatility for “i” company at time “t”= The standard deviation of the first difference in annual earnings over mean of the earning is applied as a proxy for risk
- A_{it} =Age of the firm for “i” company at time “t”= Number of Years in Business
- P_{it} =Profitability of the firm for “i” company at time “t”= EBIT/ Total Sales
- S_{it} =Size for “i” company at time “t”= Natural Logarithm of Total Assets (nl A) and
- e_{it} = The Error Term.

Table 1.1: Variable-Indicator List

<i>Serial no.</i>	<i>DEPENDENT VARIABLES</i>	<i>INDICATOR</i>
1	Total Debt Ratio	Total Debt/Total Asset
2	Short term Debt Ratio	Current Liabilities/Total Asset
3	Long term Debt Ratio	Long Term Liabilities/Total Asset
<i>Serial no.</i>	<i>INDEPENDENT ARIABLES</i>	<i>INDICATOR</i>
1	Tangibility	Fixed Assets / Total Asset
2	Non-Debt Tax Shields	Depreciation Expense /Total Assets
3	Growth	Percentage Change In Total Assets
4	Earnings Volatility	Standard Deviation of Operating Income over mean of the earnings
5	Age	Number of Years
6	Profitability	Operating Income/Total Sales
7	Size	Natural Logarithm Of Total Asset

Sources researcher own computation from hypothesis parts.

1.4. Significance of the study

The study can be taken as evidence to the determinants of capital structure in developing countries that do not have active secondary market. In addition the study significantly contribute to other studies to be made in different economic sectors by providing the image of the factors determining capital structure policies in manufacturing sector of economy by serving as a reference point. Moreover this study is important in achieving

my Masters degree, Master of Science in Accounting and Finance, which marks a bold step in my future educational career.

1.5. Scope and limitations of the study

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

The study was limited to the Federal Democratic Republic of Ethiopia, Addis Ababa and to those firms engaged in the manufacturing share companies' industry sector. The unavailability of active secondary market limited and forced the researcher to measure the dependent variable i.e. measures of debt ratio as well as the proxies of the independent variables in terms of book values rather than market values. Finally, the study was limited to firm level (internal) determinants of capital structure thereby excluding effect of external determinants of capital structure on both the dependent and independent variables which are beyond the control of the firm. Example of which is:

- Banking and other financial infrastructures and their efficiency,
- Legal structure and its efficiency,
- Availability of regulated financial markets in the country. etc

Therefore, the above listed and other external factors that may have a role as determinant of capital structure financing choices, did not consider in the study.

1.6. Organization of the Paper

This paper has five parts. Part one include: research introduction, statement of the problem, objective of the study, hypothesis, variables and model specification, methodology and research methods, significance of the study, and scope and limitation of the study. Following on this, part two of the study presented reviews of literature on determinants of capital structure; Part three presented the research methodologies; then part four presented the results and analysis of the study and finally, under part five the study presented conclusion and implication of the study.

Chapter Two

Review of related literature

Introduction

Over long period of time, most of the corporate finance literature has rotated around different theories that try to fully explain factors behind financing policy and capital structure. These theories cover various aspects of the firm that can explain how firms choose their capital structure. This chapter presents the comprehensive theoretical and empirical literature review over the capital structure theme. Section 2.1 covers theoretical literature review, section 2. covers theoretical prediction of variables which the researcher included in the study that have been found by large number of studies, section 2.3 reviews of prior empirical studies including in Ethiopia and the section 2.4 provides chapter conclusion and finally overview of manufacturing share companies in Ethiopia .

2.1. Theoretical literature review

2.1.1. Modigliani Miller propositions

When reviewing the theoretical literature related to capital structure, one must start with the paper of Modigliani and Miller (1958). The authors assume a perfect market to derive their very well known propositions. According to Modigliani and Miller Perfect market assumptions include: 1. Firms with the same degree of business risk are in homogenous risk class, 2. Investors have homogenous expectations about future corporate earnings and their levels of riskiness, 3. Securities are traded in perfect capital markets, 4. Interest rate on debt is the risk-free rate and 5. All cash flows are perpetuities.

The Proposition I states that the firm's average cost of capital and hence the value of the firm (V) are independent of its capital structure. Therefore, there is no optimal capital structure that maximizes the value of the firm (i.e. any level of leverage is as good as any other). Accordingly, in a perfect world, the value of the levered firm is equal to the value of un-levered firm. Proposition II states that the rate of return required by shareholders increases as more debt is used. In another word, any benefits from using debt would be offset by the corresponding higher cost of equity.

However, in reality, a perfect world clearly does not exist. Issues such as taxes, financial distress, asymmetric information, and conflicts between economic agents associated with the firm have an effect on the firm's capital structure. Subsequent theoretical works, thus, focus on these factors associated with market imperfections and their effects on the capital structure.

2.1.2. Models based on trade-off theory

Trade off-theory assumes that there are benefits and costs associated with the use of debt as against equity and firms thus chose an optimal capital structure that trades off the marginal benefits and costs of debt. In the beginning, the theory was limited to the tradeoff between the tax advantages of debt against the bankruptcy costs. Then it was extended to include benefits and costs associated with the use of debt in mitigating the conflicts among the agent groups associated firm (i.e. managers, equity-holders and debt-holders).

2.1.2.1. The impact of tax on capital structure

In the first form of the static trade-off theory of capital structure, the trade-off between the tax advantage of debt and the costs of financial distress is expected to yield the

optimal level of debt that maximizes the value of the firm (Myers, 1984). Here, the value of the firm rises as the firm uses more debt up to an optimum, where the benefits of additional debt through the increase in the present value of tax shield are offset by the costs due to the increased in the present value of costs of financial distress. The first paper take into account the corporate tax was the Modigliani and Miller (1963) tax correction article. The authors recognized that their perfect capital markets assumptions need modifying to allow for corporate tax in their propositions. They argue that debt typically offers a tax shelter, because interest is deducted before taxable profit is calculated. Thus, in the presence of corporate taxes, the value of the firm increases by an amount equal to the debt tax shield. Modigliani and Miller (1963) demonstrate this argument mathematically in following equation.

$$\mathbf{VL} = \mathbf{VU} + \mathbf{TC} * \mathbf{D}$$

Where

VL = the value of levered firm,

VU = the value of un-levered firm,

TC = the corporate tax and

D = the value of used debt.

The main implication of Modigliani and Miller (1963) paper is that debt financing is highly advantageous and, in the extreme, a firm's optimal capital structure is 100 percent debt.

However, debt-holders and shareholders are also subject to tax on their security income, and this affects their after-tax returns. Miller (1977) suggests that, when the personal income tax on corporate share and interest is taken into account together with corporate

income tax, the gain from corporate leverage (GL) can be expressed in following equation.

$$GL = \{1 - [(1 - TC) * (1 - TPS)] / (1 - TPB)\} * BL$$

Where

TC = the corporate tax,

TPS = personal tax rate on income from corporate shares,

TPB = personal tax rate on income from bonds and

BL = the market value of the firm's debt.

Miller (1977) shows that the tax gains from issuing debt at the corporate level will be exhausted at the personal tax level and, thus, the value of the firm, at equilibrium, is irrelevant to its capital structure. If markets are perfect (i.e. no taxes) then the gain from debt is equal to zero and as Modigliani and Miller (1958), indicating capital structure is irrelevant. In the special case where the two personal tax rates are equal, the gain from leverage reduced to $TC * BL$ gives exactly the expression in the Modigliani and Miller (1963) tax model. However, when the tax rate on income from corporate shares (TPS) less than the tax rate on income from bonds (TPB), the gain from leverage will be less than $(TC * BL)$. Moreover, when the rate satisfy that $(1 - TC) * (1 - TPS) = (1 - TPB)$, the gain from leverage vanishes entirely.

2.1.3. The impact of conflicts among the agent groups on capital structure

The seminal work on agency theory and capital structure is Jensen and Meckling (1976). They identified two types of conflicts that are a major source of agency costs and these are: agency costs that arise due to the conflicts of interest between managers and

shareholders and agency costs that arise as a result of the conflicts of interest between shareholders and debtholders.

2.1.3.1. Conflicts of interest between managers and shareholders

According to Jensen and Meckling (1976), conflicts arise between managers and shareholders when managers hold less than 100% of the residual claim. Consequently, managers capture only a fraction of the gain from their profit enhancement activities, while they bear the entire cost when they refrain from investing in such activities. Hence, managers are expected to pursue excessive perquisite consumption and not invest in activities that would maximize the value of the firm.

To mitigate this kind of conflict, different analyzing approaches have been proposed. Jensen and Meckling (1976) argue that the larger is the fraction of equity held by managers, the more they concentrate their energies on enhancing firm value. They also argue that if the absolute investment by managers is held constant, the use of debt provides a vehicle for increasing managers' share-holdings and, thus, mitigate the conflicts of interest between managers and shareholders. Jensen (1986) further argues that managers will attempt to avoid shareholder control by using internal funds (i.e. free cash flow) to expand the firm size beyond the optimal size and to accept projects with a negative net present value (i.e. over-investment). Shareholders can prevent management from undertaking such action by reducing the free cash flow through increasing the firm's debt. The presence of debt causes the manager to pay out the cash flow as an interest and repayments. Moreover, debt-holders will have the firm declared bankrupt if the firm cannot meet its obligations to them. Grossman and Hart (1982) argue that if

bankruptcy is costly for the managers because they lose benefits of control and reputation, then an increase in leverage can commit managers to generate the necessary cash flows to meet debt repayments and consequently reducing the possibility of management engaging in excessive perquisites.

Another form of conflict between managers and shareholders is that managers and shareholders may also disagree over a firm's operating decisions. Harris and Raviv (1990) and Stulz (1990) formalize this conflict and the role of debt to mitigate this disagreement. In Harris and Raviv (1990), because of managers' personal loss of control and reputation, they will in general wish to continue operating the firm even when shareholders desire liquidation. They argue that debt mitigates this conflict through the debt-holders' option to liquidate the firm in the event of default, which would also benefit shareholders if liquidation was the best strategy. Therefore, high leverage is likely to be associated with higher firm's liquidation value, and lower probability of reorganisation following the default. In Stulz (1990), on the other hand, managers may prefer to invest all available funds even if shareholders want to be paid dividends. He argues that increasing debt level can mitigate this divergence since debt payment reduces the amount of free cash available to managers. Therefore, as in Jensen (1986), firms with high free cash flow and with low growth opportunities are expected to have high debt levels.

2.1.3.2. Conflicts of interest between shareholders and debt-holders

Different fundamental sources of equity-holders and debt-holders conflicts have been identified in the agency cost literature. Jensen and Meckling (1976) identify the asset substitution problem that arises in the case when shareholders may seize wealth from

debt-holders by switching from safer to riskier and value-decreasing investments (i.e. asset substitutions). Myers (1977) points to the under-investment problem that arises in the case where a firm in financial difficulties has an incentive to sacrifice low positive net present value projects whose benefits accrue mainly to debt-holders. He further argues that the greater the investment opportunity in a firm, the greater is the potential conflict of interest between shareholders and debt-holders.

To mitigate such conflicts, Smith and Warner (1979) suggest using restrictive covenants on debt such as include interest coverage requirements or prohibitions against investing in new unrelated lines of business. However, restrictive covenants themselves also involve costs in which they reduce management flexibility by restricting the firm's investment and financing opportunities. Smith and Warner (1979) also suggest that secured debt may provide the issuer with a means to mitigate agency costs of debt.

Alternatively, firms may use convertibility option, where debt-holders have the option to convert to shareholders, to mitigate the agency costs of debt. Jensen and Meckling (1976) argue that conversion rights enable debt-holders to recapture any positive wealth transfers to shareholders and to gain from any increase in risk. Maturity of debt is another option that firms can use to mitigate agency costs. The use of short-term debt may mitigate the agency problems. Myers (1977) observes that if debt matures before growth options are exercised, the firm's incentive to deviate from a firm-value-maximizing exercise policy is eliminated. Billett et al (2007) argue further that short-term debt can mitigate both under- and over-investment incentives by making the debt less sensitive to changes in firm value and by allowing for more frequent re-pricing of debt.

In an alternative approach, Diamond (1989) argues that managerial reputation plays an important role in mitigating the conflicts between shareholder and debt-holder, mainly asset substitution problem. He suggests that the longer the period of non-default, the better is a firm's reputation as a safe firm, and the lower will be its borrowing costs. This suggests that older firms will choose the safe project to maintain reputation. Younger firms with a lesser reputation may choose risky projects with higher prospective returns, but, if they survive, they will eventually choose the safe project. In sum, the extended static trade-off theory suggests that benefits of issuing debt can be traded against their costs to determine the optimal level of debt that will maximise the value of the firm.

One of the main criticism directed to the static form of trade-off theory is that the firm is always at an optimal point, where the observed debt level is assumed to be equal to the optimal one. In reality, the decisions are often dynamic and adjustments to firm-specific optimal debt levels are costly and, thus, firms usually restructure their capital structure over time. Myers (1984) emphasizes this point and argues that there must be costs and time lags involved in adjusting to the optimal capital structure when events cause a firm to deviate from the optimal level. He further concludes that if adjustment costs are large then we ought to give less attention to refining our static trade-off stories and put relatively more emphasis on understanding what adjustment costs are, why they are so important and how rational managers would respond to them. Fischer et al. (1989) argue that fixed costs of adjustment imply that firms allow debt level to fluctuate until it becomes too extreme, and then they restructure it.

In sum, the dynamic form of trade-off theory assumes that the actual capital structure of a particular firm at a particular moment in time does not necessarily equal the target capital

structure of that firm but firm dynamically adjusts its capital structure to a moving target. Therefore, the dynamic form in which both taxes and agency concerns are present provides more comprehensive picture than the static form about the mechanism of the capital structure decision over time.

2.1.4. Models based on asymmetric information

Asymmetric information is another dimension of the capital structure theories. It is generally thought there is asymmetric information between firm managers (or insiders) and outside investors. There are two main approaches that have been developed in the literature of asymmetric information. In the first approach, Myers and Majluf (1984) and Myers (1984) argue that the capital structure is designed to mitigate inefficiencies in the firm's investment decisions that are caused by information asymmetry. In the second approach, Ross (1977) and Leland and Pyle (1977) assert that firm's capital structure choice is used as a means to signal to outside investors the information held by insiders.

2.1.5. Pecking order hypothesis

Myers (1984), Myers and Majluf (1984) works are the decisive contribution to this literature. They provided a theoretical justification for Donaldson's (1961) findings that firms prefer to use internally generated funds as a financing source and resort to external funds only if the need for funds was unavoidable. In their prospective, the nature of the asymmetric information is that managers or insiders are assumed to possess more information about their firms' prospects, risks and values than outside investors.

Myers and Majluf (1984) argue that the capital structure can help to mitigate inefficiencies in a firm's investment decision that are caused by information asymmetries.

They demonstrate that if there is an asymmetry of information between investors and firm insiders, then the firm's equity may be underpriced by the market. As a result, new equity, which is used to finance new investment projects, will be also under-priced. Therefore, if management has favorable inside information and acts in the best interest of the existing shareholders, then management will refuse to issue equity even if it means passing up positive net present value projects because the net loss to existing shareholders (due to under-pricing problem) might outweigh the project's Net present values. On the other hand, passing up net present value projects is contrary to the wealth maximization. Using financial sources that may not be undervalued by the market, particularly internally generated funds could solve this under-investment problem.

Accordingly, the existence of sufficient internal finance allows firms to accept desirable investments without relying on costly external finance. Myers and Majluf (1984), argue that firms are most likely to generate financial slack (i.e. liquid assets such as cash and marketable securities) to be used for internal funding. Thus, in order to protect present shareholders, firms with financial slack and in the presence of asymmetric information, will not issue equity, even though it may involve passing up a good investment opportunity. If investors realize this point, then the market will take the decision not to issue shares as good news. On the other hand, if management does offer a new share issue, it will be interpreted as a bad news, and the firm's share issue will be under-priced. This adverse selection problem has an influence on the choice between internal and external financing. This choice lead to the Pecking Order Hypothesis, which Myers (1984) summarized as following:

Firms prefer internal finance.

Firms adjust their target dividend payout ratios to their investment opportunities, although dividends are sticky and target payout ratios are gradually adjusted to shifts in available investment opportunities. Sticky dividend policies as well as unpredictable fluctuations in both profitability and investment opportunities mean that internally generated funds are more or less than investment outlays. If internally generated cash flow is less than investment outlays, the firm first exhausts its cash balances or marketable securities portfolio.

If external financing is required, firms will resort to the safest security first. They start with debt, then hybrid securities such as convertible bonds and finally equity as a last resort. A single optimal or target debt-equity ratio does not exist in the pecking order theory since financing decision does not rely on the trade off between marginal benefits and costs of debt. Moreover, there are two types of equity, internal and external; one is at the top of the pecking order and one at the bottom. A firm's leverage ratio thus changes when there is an imbalance between internal funds and real investment opportunities.

Moreover, Myers (1984) introduced implication similar to the pecking order theory known as the modified pecking order theory. In this framework, both asymmetric information and costs of financial distress are incorporated. Myers argues that as firm climbs up the pecking order it faces higher probability of both incurring costs of financial distress and passing up future positive net present value projects. Thus, firm may rationally decide to reduce these costs by issuing stock now though new equity is not needed immediately to finance real investment, just to obtain financial slack and move the firm down the pecking order.

2.1.6. Signaling with proportion of debt

In this approach, it is assumed that the investment opportunity is fixed and the choice of capital structure signals to outside investors the private information of insiders. The seminal contribution in this area of literature is due to Ross (1977). In his model, Ross assumes two types of firms (high quality with high leverage and low quality with low leverage) that have different prospects and that these are known by managers but not by investors. Moreover, managers benefit if the company's securities are more highly valued by the market but are penalized if the firm goes bankrupt. Under such circumstances, the level of debt the company managers choose serves as a signal about the quality of the company, a signal sent from the managers as possessors of private insider information towards outside investors. Since lower quality firms have higher marginal expected bankruptcy costs for any debt level, managers of low quality firms do not imitate higher quality firms by issuing more debt. Therefore, higher leverage is a "good signal" in this model.

The Ross's model has two main empirical implications. First, the probability of bankruptcy rises as the amount of debt issued by the firm increases. Second, the value of the firm is positively related to its leverage ratio. Thus, the firm value, leverage, and bankruptcy are all positively related. Leland and Pyle (1977) develop a model of capital structure and financial equilibrium where an entrepreneur who wants to undertake an investment project and plans to hold a certain fraction of the firm's equity and the remaining is raised from outside lenders. Since entrepreneur is known to be a risk-averse, he will choose a high fraction in a risky project only if he confident about its success.

Thus, in the signaling equilibrium, the market inferred the amount of equity retained by the entrepreneur as a signal of the firm quality.

2.2. Theoretical Prediction

Harris and Raviv (1991) argue that theories of capital structure have identified a large number of potential factors that might have an impact on debt levels. Among these factors which have been found by a large number of studies to influence the firm's capital structure are size, tangibility, profitability, risk, nontax shield, growth, uniqueness, dividends, free cash flow, liquidity, age and percentage of outstanding shares held by the government. However, there is significant disagreement among the capital structure theories, in particular, between the trade-off and the pecking order theories about the influence of some factors on the firm's capital structure. In this section, therefore the discussion involves the viewpoints of the capital structure theories about the effect of these attributes on leverage ratios by considering the following factors tangibility,, growth, volatility, age, profit, Size and non-debt tax shields.

2.2.1. Tangibility

Titman and Wessels (1988) and Harris and Raviv (1991) argue that tangibility might be the major factor in determining the firm's debt levels. Theoretically, Jensen and Meckling (1976) argue that issuing debt increases the shareholders motivation to invest sub-optimally in high-risk projects, taking advantage of the possibility of increasing their benefits at the expense of increasing the risk, which is passed on to the debt-holders, who are the ones that would suffer the possible losses. However, if debt is secured against assets, the borrower is restricted to using loaned funds for a specific project, and creditors

have an improved guarantee of repayment. Thus, firms with high level of fixed assets would have higher level of debt. Bevan and Danbolt (2002), however, argue that if the tangibility provides a reasonable proxy for the availability of depreciation tax shields, the tax-based hypothesis of DeAngelo and Masulis (1980) would expect a negative rather than a positive association between leverage and tangibility.

2.2.2. Non-debt tax shield

DeAngelo and Masulis (1980) argue that tax deductions for depreciation and investment tax credits are substitutes for the tax benefits of debt financing. As a result, firms with large non-debt tax shields relative to their expected cash flow include less debt in their capital structures. The existence of corporate tax shield substitutes for debt such as depreciation deductions and investment tax credits. Introduction of these realistic corporate tax code features leads to a market equilibrium in which each firm has a unique interior optimum leverage decision due solely to the interaction of personal and corporate tax treatment of debt and equity. DeAngelo and Masulis, (1980).

2.2.3. Growth

Myers (1977) argues that the under-investment and asset substitution issues are likely to be more severe for firms with great growth opportunities and, thus, such firms should use less debt in order to mitigate these agency problems. Titman and Wessels (1988) further argue that since growth opportunities are capital assets that add value to the firm but cannot be collateralised, the costs associated with agency conflicts between equity and debt holders is expected to be higher for firms in growing industries.

Accordingly, a negative relationship between debt and growth opportunities suggested. Pecking-order hypothesis also suggests a negative relationship between leverage and growth opportunity. According to Myers and Majluf (1984), information asymmetry demands an extra premium for firms to raise external funds irrespective of the true quality of their investment project. In the case of issuing debt, the extra premium is reflected in the higher required yield. Therefore, firms with growth opportunities may find it too costly to rely on debt to finance its growth. Myers (1977), however, argues that these agency problems can be mitigated if the firm issues short term debt rather than long-term debt. This would suggest that growth to have a negative relationship with long-term debt and a positive relationship with short-term debt.

2.2.4. Volatility

The theoretical literature argues that firms with high variability in earnings have a greater risk not to meet their debt obligations, so increasing the probability of default. Thus, lenders will be less willing to lend or will charge a higher risk premium since they will have a greater probability of losing their money. DeAngelo and Masulis (1980) argue that the cost of debt will increase for firms that have variability in their earnings since investors will not be able to accurately predict future earnings based on publicly available information. Bradley et al. (1984) argue further that the variability of the firm value expected to show negative influence on the debt ratio when the costs of financial distress are significant. Consequently, this suggests an inverse relationship between risk and leverage.

2.2.5. Profitability

There are no consistent theoretical predictions on the influence of profitability on firm's capital structure. From the point view of the trade-off theory, the more is the firm profitable, the higher the leverage should be due to debt tax deductibility of interest payment. Rajan and Zingales (1995), further, argue that debt suppliers should be more willing to lend to profitable firms.

Accordingly, a positive dependence is expected to be observed between leverage and profitability. On the other hand, the main argument supporting a negative relationship between leverage and profitability comes from the pecking order theory. Myers (1984) and Myers and Majluf (1984) argue that, as a result of information asymmetry between corporate insiders and the market, investors may under price firm's equity. If firms finance new projects by issuing equity, the net effect is that new investors obtain a higher gain from this investment than pre-existing shareholders, which may cause the project not to be accepted on these grounds even when it has a positive net present value (under investment problem). To avoid such problems, internal funds and even debt that is not too risky will be preferred to equity. Accordingly, firms will prefer to finance from retained earnings first, then from debt and finally from issuing new equity. This, in turn, suggests a negative relationship between profitability and debt ratios.

2.2.6. Firms Age

Diamond (1989) argues that aged firms with a long history of credits will have relatively low default probability and lower agency costs using debt financing than newly established firms. Accordingly, a positive relationship is expected between age and debt

ratio. On the other hand, according to pecking order hypothesis, firms prefer raising funds first from retained earnings and resort to external funds only if the former is insufficient, in which issuing debt is preferred over issuing equity. Therefore, young firms are more likely to depend on debt instruments since they do not have sufficient funds internally to finance new investment. Hall et al. (2004) argue that new firms will not have had time to cumulate funds and may be forced to borrow. This suggests an inverse relationship between age and debt ratio.

2.2.7. Size of the firm

Studies by Ashenafi (2005) and Buferna et al (2005) among others have suggested that leverage ratios may be related to firm size positively. Titman and Wessels (1988) state that direct bankruptcy costs appear to constitute a larger proportion of a firm's value as that value decreases. It is also the case that relatively large firms tend to be more diversified and less prone to bankruptcy. These arguments suggest that large firms should be more highly leveraged.

In contrary to the above arguments, the cost of issuing debt and equity securities is also related to firm size. In particular, small firms pay much more than large firms to issue new equity and also somewhat more to issue long-term debt. This suggests that small firms may be more leveraged than large firms and may prefer to borrow short term (through bank loans) rather than issue long-term debt because of the lower fixed costs associated with this alternative.

2.3. Empirical studies on the determinants of capital structure

The purpose of this section of the literature review is to provide a wide range of the relevant empirical studies related to the area of capital structure. Prior empirical studies in this area can be divided into two main approaches of which the first approach involves a survey-based analysis while the second involves regression analysis using company's accounting data. This section proceeds as follows: Section 2.3.1 goes over the prior survey based studies. Section 2.3.2 reviews prior regression based studies examining specific theory. Section 2.3.3 reviews prior regression based studies examining general capital structure themes and 2.3.4 reviews prior studies in Ethiopia context.

2.3.1. Prior empirical studies survey-based analysis

As an attempt to narrow the gap between theory and the behavior of financial managers in practice, some studies adopted survey methodology. In this approach, company or financial managers have been asked about their views and behavior regarding capital structure decisions, in particular, their views on issues related to the two dominant theories (i.e. pecking order and trade-off theories). Following are the studies that have been carried out adopting survey approach.

Donaldson (1961) conducted an interview survey on 25 large US firms. Consistent with pecking order hypothesis, he found that management strongly prefer to use internal generation as a source of new funds and resort to external funds only if the need for funds was unavoidable. With a response rate of 21% of the 468 industrial firms surveyed from the 1984 fortune 500, Norton (1989) found that financial managers preferred to use internal resources first and in the case where external financing is needed, debt is used

more than equity due to the tax deductibility of interest payments. However, factors dealing with bankruptcy costs, agency costs and information asymmetries were found to have little effect on financial decision makers' behavior.

Graham and Harvey (2001) carried out a survey on 392 Chief Financial Officers of US firms, which represents a response rate of 8.5%. In their analysis of capital structure responses, they found financial flexibility and credit ratings were the most important debt policy determinants whereas earnings per share dilution and recent stock price appreciation were the most important determinants influencing equity issuance. Moreover, while a moderate support was found for both the pecking order and trade-off theories, issues related to asset substitution, asymmetric information, transactions costs, free cash flows and personal taxes were found to have little effect on executives' financial decisions.

In countries other than US, Allen (1991) interviewed senior financial personnel of 48 listed Australian companies. He found that 93 % of the respondents were found to pursue a policy of maintaining spare debt capacity. Relatively consistent with pecking order prediction, 52.1 % of the respondents preferred to fund their business by internal funding sources. Moreover, some evidence on target debt ratios and tax considerations of debt is found. More recently, Beattie et al (2006) conducted survey on 192 financing directors of UK listed companies, which represents a response rate of 23%. The main finding is heterogeneity among companies regarding capital structure policies, in which about 50% respondents seek to maintain a target debt level (i.e. consistent with trade-off theory) and 60% claim to follow a financing hierarchy, (i.e. consistent with pecking order hypothesis). The respondents, however, did not view these two theories as either

mutually exclusive or comprehensive. Moreover, company size is found to have an important influence on corporate financing decisions. Broadly, theoretical arguments related to interest tax shield, financial distress, agency costs and information asymmetry were found to be acceptable by respondents.

In international comparisons, Bancel, and Mittoo (2004) carried out a survey on Chief Financial Officers of 87 firms in 16 European countries with a response rate of 12%. In comparison to Graham and Harvey (2001) study, they found that European managers use factors similar to those used by their U.S. counterparts for their financing decisions. However, there were differences among European countries on several dimensions, particularly between Scandinavian and non-Scandinavian countries. Country's institutional structure, especially the quality of its legal system was found an important determinant of debt policy. Financial flexibility and earnings per share dilution were the managers' primary concerns in issuing debt and common stock respectively. Most firms determined their optimal capital structure by trading-off factors such as tax advantage of debt, or bankruptcy costs, agency costs, and accessibility to external financing.

2.3.2. Empirical results concentrated on the testing of specific theories

Many studies have investigated the process of how firms chose their debt/equity level in the framework of the two leading theories, namely, the pecking order hypothesis and trade-off theory. This subsection, thus, organized based on either study tests pecking order hypothesis or it examines trade-off theory or both.

A limited number of studies directly test the pecking order theory using specific econometric models. Baskin (1989) examined the pecking order hypothesis directly by

using structural model. The key finding is that the payments of high levels of past dividends reduce the amount of the retained earnings and, thus, increases the demand for debt. Studies carried out by Klein and Belt (1993); Allen (1993) and Adedeji (1998) also have directly tested the pecking order theory and find support for it. On the other hand, Frank and Goyal (2003) tested the pecking order theory using system equations. Inconsistent with the prediction of the pecking order theory, their results show that external funding is largely used, and debt financing does not dominate equity financing in magnitude. Moreover, net equity issues track the financing deficit more closely than do net debt.

On the other hand, much of the empirical work in this area has focused on the static and dynamic trade-off theories. An early study that tested trade-off theory adopting a static approach is Taggart (1977). The author found that movements in the market values of long-term debt offset by movements in the market of equity and, thus, firms adjust toward a target debt/equity ratio.

Marsh (1982), Opler and Titman (1994), Hovakimian et al (2001) also found evidence that firms appear to adjust toward debt targets which is consistent with the prediction of the trade-off theory. However, these studies have been conducted using static approach in which they assume that observed ratios equal optimal ratios and the adjustment to the target is costless.

Recently, studies have extended traditional static models by introducing dynamics into the capital structure choice in which firms dynamically adjust their capital structure to target and the adjustment is costly. Jalilvand and Harris (1984) used system equations to estimate their target-adjustment model. They found that firms adjust gradually toward

long-run financial targets. Firm size, interest rate conditions, and stock price level were found to be the main factors affecting the cost and the speed of adjustment. Large firms appeared to adjust to the long-term debt target faster than small firms do. Fischer et al. (1989), Gatward and Sharpe (1996), DeMiguel and Pindado (2001), Ozkan (2001), Bhaduri (2002), Mayer and Sussman (2004), Gaud et al. (2005) and Kayhan and Titman (2007) also provide evidence that firms have target ratios and adjust dynamically to the target ratio with different costs and different speeds.

Finally, a few studies have sought to distinguish which of the two main theories (the pecking order hypothesis and trade-off theory) best explains capital structure practice. Shyam-Sunder and Myers (1999) perform a simulation test for the two models and conclude that the pecking order hypothesis is an excellent first-order approximation of actual corporate financing behavior. Chirinko and Singha (2000), however, criticize Shyam- Sunder and Myers's test and show that their "elegantly simple" test generates misleading inferences when evaluating plausible patterns of external financing. They argue further that their empirical evidence can evaluate neither the pecking order nor static trade-off models. Fama and French (2002) use system equations to test for the two models. In line with the predictions of both models, the results show that more profitable firms and firms with fewer investments have higher dividend payouts. In support of the pecking order model, the results show that firms that are more profitable are less levered and short-term variation in investment and earnings is mostly absorbed by debt.

2.3.3. Empirical results on general capital structure themes

Since the pioneering work of Modigliani and Miller (1958), the question of what determines firms' choices of capital structure has been a major field in the corporate finance literature. Since then, numerous studies have attempted to identify those factors that have an effect on firms' choice of capital structure. A previous narrative review conducted by Harris and Raviv (1991) showed that the direction of the relationship between leverage and its determinants across studies shows some inconsistent findings. Accordingly, they conclude that understanding and analysing these mixed results across research studies is filled with difficulty in the capital structure literature.

One of the classical researches was carried out by Titman and Wessels (1988); where they studied the theoretical determinants of capital structure by examining them empirically. The theoretical attributes namely; asset structure, non-debt tax shields, growth, uniqueness, industry classification, firm size, earnings volatility and profitability were tested to see how they affect the firm's debt-equity choice. The results indicated consistencies with theory for the factors affecting capital structure choices of firms. One of the few interesting conclusion drawn from the studies include the negative levels of debt to "uniqueness" of a firm's line of business. The short-term debt ratio was negatively related to firm size. Besides that, a strong negative relationship was noted between debt ratios and past profitability. This study however did not provide strong empirical support on variables like non-debt tax shields, volatility, collateral value and future growth. As stated previously, there were many papers written by research scholars on capital structure choices that are mostly based on empirical data of the firms in the United States only. To broader the understanding of capital structure models, Rajan and

Zingales (1995) have attempted to find out whether the capital structure choices in other countries is based on the similar factors of those influencing capital structure of U.S firms. For this purpose, the accounting data and monthly stock prices for five years, from 1987 till 1991 were collected from the international financial database called Global Vantage of all the G7 countries; namely the U.S, Japan, Germany, France, the U.K, Italy and Canada. Banks and insurance companies were eliminated from the sample collected as their leverages are affected by government regulations. Four factors; tangibility of assets, growth, firm size and profitability were tested to see its influences on leverage. A cross-sectional basic regression model of leverage was developed with four of the factors mentioned above as independent variables. Rajan and Zingales noted that across the countries, the asset tangibility was positively correlated with leverage for all the countries as theory supported the notion that firms having more fixed assets in their assets mix will use that as collateral to get more loans or debt. The market to book ratio seemed to be negatively correlated with leverage except for Italy. Having high market value of the stocks would enable firms to issue more stocks and not seeking debt. Size of firm was positively correlated while profitability was negatively correlated with leverage in all countries except Germany. As a conclusion, this paper found that at an aggregate level, firm leverage was fairly similar across the G-7 countries. This study also pointed out some avenue for future research especially on the unbiased sample selection, the actual determinants of capital structure and deeper consideration of institutional influences.

After Rajan & Zingales, there were several research papers made on capital structure by testing the applicability on other countries apart from United States alone. One of the

prominent researches was carried out by Gropp and Heider (2007) approached the issue of Bank Capital Structure using banks from developed countries (US and 15 EU members, for 14 years). They specifically tested the significance of size, profitability, market-to-book ratio, asset tangibility, and dividend paying status in determining bank leverage. Their results provided strong support for the relevance of standard determinants of capital structure on bank capital.

2.3.4. Prior studies related to the context of Ethiopia in determinants of capital structure

Most capital structure studies made to date are based on data from developed countries. There are few studies that provide evidence from developing countries. The determinants of capital structure of Ethiopian firms are still in under-explored areas in the literature of financing decision. As per the researcher's access and knowledge, the researchers conducted on determinants of capital structure so far in Ethiopian case are by Ashenafi (2005) and Mintesinot (2010).

Ashenafi (2005) approached the question of capital structure using data from medium firms in Ethiopia. He took variables like non-debt tax shield, economic risk, age of firms, size of firms, tangibility, profitability and growth were regressed against leverage. The results proved that non-debt tax shield, economic risk, profitability, growth, tangibility, and age showed a negative coefficient of correlation with debt to equity ratio. Recently, Mintesinot (2010) has undertaken an attention-grabbing study on the determinants of capital structure evidencing manufacturing firms in Tigray, Ethiopia. Mintesinot has used eight explanatory variables: Tangibility, Profitability, Growth, Age, Uniqueness, Size,

Earnings Volatility, and Non-Debt Tax Shields. After regressed these variables against leverage, he came up with the outcomes as following: Tangibility, Firm Growth, Age of the Firm, Firm Size, Earnings Volatility and Non Debt Tax Shields variables are the significant determinants of capital structure in at least one out of the three models for capital structure employed in his study.

2.4. Conclusion

The history of the theoretical research in capital structure has started with the famous irrelevance theory of Modigliani and Miller (1958). However, by relaxing Modigliani and Miller's assumptions of perfect capital markets, several theoretical frameworks have been developed to explain the firm's capital structure.

Trade off-theory assumes that there are benefits and costs associated with the use of debt as against equity and firms thus chose an optimal capital structure that trade-off between benefits and costs of debt. The theory comes in several forms. The first distinction is that in the beginning the theory was limited to the trade off between the tax advantages of debt against the bankruptcy costs. Then it was extended to include benefits and costs associated with the use of debt in mitigating the conflicts among the agent groups associated with the firm. A second distinction is between the static trade-off model in which a firm is always at an optimal point, and the dynamic model in which a firm dynamically adjusts its capital structure to a moving target and the adjustment is costly.

Asymmetric information is another dimension of the capital structure theories. It is generally thought there is asymmetric information between firm managers (or insiders) and outside investors. In the pecking order theory, there are three sources of funding

available to firms: retained earnings, debt, and equity. Equity is subject to serious adverse selection, debt has only minor adverse selection problems, and retained earnings avoid the problem.

Therefore, due to asymmetric information, firms prefer internal over external financing and if external financing is needed debt is preferred over equity. Under this theory, a single target debt ratio does not exist; instead the debt ratio reflects the residual of retained earnings, dividend payout and investment decisions over time. In signalling theory, however, firm's capital structure choice is used as a means to signal to outside investors the information held by insiders.

Finally, models based on industrial organization and corporate control considerations provide explanations of how the characteristics of a firm's inputs/products and firm's control and strategy affect its capital structure.

Although the theories presented in this chapter identified many potential determinants of capital structure, the question of which of these theories best explains capital structure practice remains unanswered. The chapter addresses also a brief discussion about the inconsistency of previous empirical results on general capital structure themes. The discussion highlights the importance of studies' measurement differences and sample sizes issues in the cross-study comparisons that are generally ignored in traditional literature review.

In Ethiopia also few studies were undertaken on determinants of capital structure on different sectors and the result shows once again some inconsistency with that of the general capital structure theories.

2.5. Overview of manufacturing companies in Ethiopia

The manufacturing sector in Ethiopia is at an early stage of development, currently (2001 E.C) accounting for about 11 percent of GDP and 9.5 percent of employment. There are about 130 state- owned and 7,000 private manufacturing industries of all sizes, mainly engaged in the production of food, beverages, tobacco, textile, leather and foot wear, paper, metallic and non- metallic mineral products, cement and chemicals. Ethiopia's industrial policy is based on Agricultural Development Led Industrialization (ADLI) strategy, whose main objective is the gradual structural transformation of the economy from agricultural to industrial development using the country's human and natural resources.

Major manufacturing opportunities offering attractive potential benefits to prospective investors are hereby outlined in the food and beverage, leather and textile, chemical and paper, electrical and electronic, building materials, and non-metallic mineral and metallic industrial sub-sectors. Nearly all of these investment opportunities are based upon the need and/or recourses of the country.

Food and Beverages : Processing and preserving of meat products; integrated production, processing and preserving of fish and fish products; processing and preserving of fruits and vegetables; integrated production and processing of dairy products; manufacture of starch and starch products; processing of animal feed; manufacture of sugar; manufacture of brewery, mineral water, winery, soft drinks etc.

Tannery and Leather Goods and Articles: Integrated tanning up to finishing; manufacture of luggages, handbags, saddler, harness, footwear and garment.

Textile: preparation and spinning of textile fibers, weaving of textile fabrics, and made-up textile articles.

Glass and Ceramics: table ware and sanitary ware, sheet glass, and manufacturing of containers based on raw materials.

Chemicals and Chemical Products: manufacture of basic chemicals based on local raw materials, including PVC granules from ethyl alcohol, formaldehyde from methanol, manufacture of caustic soda and chlorine based chemicals, carbon black; activated carbon; precipitated calcium carbonate; textile dyes, ball-point ink, and tallow for soap.

Drugs and Pharmaceuticals: Manufacture of pharmaceutical, medicinal, chemical and botanical products in the form of tablets, capsules, syrups and injectables.

Paper and Paper Products: pulp from indigenous raw materials, paper and paper products.

Plastic Products: high pressure pipes, pipe fittings, shower hoods, wash basins, insulating fittings, lighting fittings, office and school supplies and fittings for furniture.

Building Materials: manufacture of cement, lime, gypsum, marble, granite, limestone, ceramics, roofing tiles, corrugated sheets, tubes, pipes and fittings.

Electrical and Electronic Products: Manufacture of office, accounting and computing machinery; manufacture of electric motors, generators, transformers, capacitors, resistors, switch gears, electrical fittings and integrated circuit boards; manufacture of radio, television, VCRs, printers, floppy disc drives, communication and other equipment and apparatus for the domestic and export market.

Metallurgy: manufacture of basic iron and steel; operation of blast furnaces, steel converters, rolling and finishing mills.

Structural Metal Products: manufacture of metal structures, fabricated steel structures, bridges, towers and recycling of metal and non-metal waste and scrap.

Machinery and Equipment: assembly and manufacture of agricultural machinery and equipment, industrial, transport and mining machinery and parts, construction machinery, machine tools and accessories, miscellaneous light engineering products, components and parts.

Chapter 3

Research methodology and methods

This chapter highlights the research objectives and hypothesis, methodology of the study, survey and sampling design, structured survey documents, model specification and methods of data analysis.

3.1. Research objectives and hypothesis

Before selecting the research method adopted it is important to see the objective and hypothesis of the research. The major objective of this study is to understand the relevance of the theoretical internal (firm level) factors determining capital structure in explaining the differences in the capital structures of manufacturing share companies in Addis Ababa city. In order to get insight in to this main objective, the researcher analyzes the following hypothesis:

Hypothesis 1: There is a positive relationship between leverage ratios and tangibility

Hypothesis 2: There is a negative relationship between leverage ratios and non-debt tax shields.

Hypothesis 3: There is a positive relationship between leverage ratios and growth.

Hypothesis 4: There is a negative relationship between leverage ratios and earnings volatility.

Hypothesis 5: There is a positive relationship between leverage ratios and age.

Hypothesis 6: There is a negative relationship between leverage ratios and profitability.

Hypotheses 7: There is a positive relationship between leverage ratios and size.

3.2. Research methodology

There are three research paradigms; these are quantitative research, qualitative research, and mixed research. To select which approach is important for this study first it is better to see in brief what they mean.

Quantitative research is generally made using scientific methods, which can include: the generation of models, theories and hypotheses, the development of instruments and methods for measurement, experimental control and manipulation of variables, collection of empirical data modeling and analysis of data evaluation of results. Quantitative research uses the deductive or confirmatory or “top down” scientific method; it is used primarily for description, explanation, and prediction. It is based on quantitative data, in particular on the analysis of variables. The results are statistical and a goal is to generalize the results.

“A quantitative approach is one in which the investigatory primarily uses postpositive claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collect data on predetermined instruments that yield statistics data (Creswell, 2002).”

In qualitative research, in contrast, the “bottom up” or inductive exploratory method is used; it is used primarily for the purposes of description and exploration and to gain an understanding of how people think and experience their lives. It is based on qualitative data which during analysis are examined for patterns, themes, and holistic features. A narrative report is presented and generalization is usually not a goal because the focus is

on the local, the personal, and the subjective. Moreover, it explained by Creswell as follows:

“A qualitative approach is one in which the inquirer often makes knowledge claims based primarily on constructivist perspectives (i.e., the multiple meanings of individual experiences meanings socially and historically constructed, with an intent of developing a theory or pattern) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative, or change oriented) or both. It also uses strategies of inquiry such as narratives, phenomenologies, ethnographies, grounded theory studies, or case studies. The researcher collects open-ended, emerging data with the primary intent of developing themes from the data (Creswell 2002).”

Mixed research is the third and newest research methodology paradigm. It tries to mix the best of qualitative and quantitative research into research studies. Philosophically, mixed research takes an eclectic, pragmatic, and commonsense approach, suggesting that the researcher mix quantitative and qualitative in a way that works best for the given research question being studied in a particular context. Mixed research uses both deductive and inductive methods, obtains both quantitative and qualitative data, attempts to corroborate and complement findings, and takes a balanced approach to research. This mixed method can be explained by Creswell as follow:

“A mixed methods approach is one in which the researcher tends to base knowledge claims on pragmatic grounds (e.g., consequence-oriented, problem-centered, and pluralistic). It employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problem. The data collection also involves gathering both numeric information (e.g., on instruments) as well as text

information (e.g., on interviews) so that the final database represents both quantitative and qualitative information (Creswell 2002).’’

3.3. Survey design

The researcher intention was to investigate the determinant of capital structure in manufacturing share companies of Ethiopia in Addis Ababa city to achieve this objective and to test the hypotheses the researcher used quantitative research approach because it is the best approach to use to test a theory or explanation (Creswell,2002) since this study tested seven variables which stated in the hypotheses section which makes this approach better than other approaches to achieve the objective of the paper. From the alternatives under quantitative approach the researcher used survey method than experimental one due to the following reason surveys are relatively inexpensive (especially self-administered surveys) and surveys are useful in describing the characteristics of a large population by taking sample on this occasion no other method of observation can provide this general capability. The survey was cross sectional; with the data collected at one point in time.

3.4. Sampling design

The population of the study is manufacturing¹ share² companies in Addis Ababa city administrations. These firms have provided audited financial statements to tax authority

¹ The international standard industrial classification (ISIC Revision-3 cited in central statistics agency (CSA), 2003) defined manufacturing activity as “the physical or chemical transformation of materials or components into new products, whether the work is performed by power driven machines or by hand, whether it is done in a factory or in the worker’s home, and whether the products are sold at the whole sale or retail. The assembly of the component parts of manufactured products is also considered as manufacturing activities.”(CSA 2003).

² Share companies are a company whose capital is fixed in advance and divided in to share and whose liabilities are met only by the asset of the company. The members shall be liable only to the extent of their share holding, formation of a share company shall be by a public memorandum Tesfaye, M. (2008).

since 1996. For this study, 6 years data (1996-2001 E.C inclusively) has been considered. The data for year the 1996 E.C. used to compute the year 1997 value for indicator of variable growth i.e. change in total asset. Those manufacturing share companies which have established after 1996 and started to provide financial statement in the succeeding physical year was not included in this study since the study target companies are those who have financial statement on 1996 E.C and on wards.

The rationale for selecting manufacturing share companies is because they are category “A” tax payers. According to income tax regulation number 78/2002, category “A” tax payers must prepare and submit balance sheet and income statement (profit and loss statement) to the Tax Authority at the end of the tax year. Hence, it would be easier to access the financial statement of these companies as this study solely depends on data from financial statements. In addition to this, the study on manufacturing companies captured the researcher’s attention as they have significant contributions to the economic growth of the country. The growth rate of this sector was 10.1% on average from 1996 to 2001 (MOFED Report, 1996-2001 E.C).

According to the report of ministry of industry, in Addis Ababa city, the manufacturing share companies with audited financial statements from 1996 to 2001 E.C were found to be 29. Out of these the researcher took twelve manufacturing share companies as a sample size because the researcher believed that given the availability of time and finance it was difficult to take sample size more than this. Overall, the main and major reason for not taking the higher amount of sample³ size is that, since the study is survey

³ The vast majority of survey samples, however, involve very small fraction of populations. In such instance small increments in the fraction of the population included in a sample will have no effect on the population included in a

based taking a higher amount of a sample does not affect the researcher to generalize the result to the populations.

Major manufacturing sectors in Ethiopia which are offering attractive potential benefits to prospective investors are hereby outlined in the food and beverage, leather and textile, chemical and paper, electrical and electronic, building materials, and non-metallic mineral and metallic industrial sub-sectors, shoe factories, and agro industries (CSA 2003).

The sampling procedure employed in this study was stratified sampling method based on the afore-mentioned Central Statistics agency (CSA) classifications of manufacturing companies. Stratified sampling technique used because it is more appropriate as manufacturing share companies have different categories of operation. Among the above listed types of manufacturing companies, four types of manufacturing companies sector are chosen based on combination of their nature (See appendix 1). And then each of four strata was divided into three groups based on companies paid up capital⁴. This is because the researcher is believed that by doing so the representativeness of all groups in the sample was increased and it reflects the true proportion of the sample about the population. Further, Solomon (2004) on his study of socio economic determinants of growth of small manufacturing enterprises in Addis Ababa city divides manufacturing industry into four strata as leather, textile, metal and food companies.

sample will have no effect on the ability of the researcher to generalize from a sample to a population (Fowler, 1993,P34)

⁴ As there is no base for the researcher to divided share companies based on their size, as large, medium and small, and hence, the researcher preferred to use companies paid up capital as the second strata to increase the representativeness of each companies in the study. Accordingly group "A" represent companies' paid up capital from birr,50,000 - birr15,000, 000group "B", birr15,000,001- birr 100,000,000 and group "C", greater than 100,000,000.

Accordingly, after stratifying the population using nature of operation and paid up capital the study selected a total sample of twelve (12) companies from all sectors and paid up groups' using random sampling techniques. Unlike other sampling techniques, simple random sampling method has the following advantage which leads the researcher to use it. First, the method gives equal chance for all strata in the study to be included in the sample. Second, it minimizes the existence of sampling biases, and thirdly, the method itself is too easy to use. Accordingly, the study has a total of sixty (60) observations to undertake study. In light of the above discussion the overall summary of sampling design is depicted on appendix 2.

3.5. Structured survey of documents

Data for this study was collected from the Audited financial statements: Balance Sheet and Income statement. The data related to a company which is necessary to undertake the study was gathered from the financial statements submitted to Ethiopian Revenues and customs Authority Branch Office in Addis Ababa city for tax purpose. This is done in an attempt to avoid the risk of distortion in the quality of data that could be obtained directly from the respective company's archives and due to the operational location differences in the companies under investigation. The criterion for inclusion in the study unit was holding 6 years data, from 1996-2001 E.C is the quality and availability of data for a time period.

3.6. Model Specification

The model is derived on the basis of previous studies such as Ozkan (2001), Bevan and Danbolt (2000) and Titman and Wessels (1988). The chosen model is strongly believed

to capture the essence of the subject under study. The following three models are specified based on the relation outlined in the hypothesis.

Model for Total Debt Ratio

$$\begin{aligned} \text{Total Debt Ratio (TDR)} = & \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] \\ & - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it} \end{aligned}$$

Model for Short Term Debt Ratio

$$\begin{aligned} \text{Short Term Debt Ratio (STDR)} = & \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] \\ & - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it} \end{aligned}$$

Model for Long Term Debt Ratio

$$\begin{aligned} \text{Long Term Debt Ratio (LTDR)} = & \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] \\ & - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it} \end{aligned}$$

Where:

- TDR = Total Debt Ratio
- STDR = Short Term Debt Ratio
- LTDR = Long Term Debt Ratio
- β_1 = Coefficient of Intercept,
- β_2 = Coefficient of Tangibility,
- β_3 = Coefficient of Non-debt tax shields,
- β_4 = Coefficient of Growth,
- β_5 = Coefficient of , Earnings Volatility
- β_6 = Coefficient of Age,

- β_7 = Coefficient of profitability, and
- β_8 = Coefficient of size,
- T_{it} =Tangibility for “i” company at time “t”= Fixed Asset/Total Asset
- $NDTS_{it}$ =Non-debt tax shields for“i” company at time “t”= Depreciation/Total Asset
- G_{it} =Growth= $[TA_t - TA_{t-1}] / TA_{t-1}$
- EV_{it} =Earnings Volatility for “i” company at time “t”= The standard deviation of the first difference in annual earnings over mean of the earning is applied as a proxy for risk
- A_{it} =Age of the firm for “i” company at time “t”= Number of Years in Business
- P_{it} =Profitability of the firm for “i” company at time “t”= EBIT/ Total Sales
- S_{it} =Size for “i” company at time “t”= Natural Logarithm of Total Assets (nl A) and
- e_{it} = The Error Term.

Table 3.1: Variable-Indicator List

<i>Serial no.</i>	<i>DEPENDENT VARIABLES</i>	<i>INDICATOR</i>
1	Total Debt Ratio	Total Debt/Total Asset
2	Short term Debt Ratio	Current Liabilities/Total Asset
3	Long term Debt Ratio	Long Term Liabilities/Total Asset
<i>Serial no.</i>	<i>INDEPENDENT ARIABLES</i>	<i>INDICATOR</i>
1	Tangibility	Fixed Assets / Total Asset
2	Non-Debt Tax Shields	Depreciation Expense /Total Assets
3	Growth	Percentage Change In Total Assets
4	Earnings Volatility	Standard Deviation of Operating Income over the mean
5	Age	Number of Years
6	Profitability	Operating Income/Total Sales
7	Size	Natural Logarithm Of Total Asset

Sources researcher own computation from hypothesis parts.

3.7. Method of data analysis

To test the hypothesis, the relationships between the level of debt and seven explanatory variables representing tangibility, non-debt tax shields, growth earnings volatility, age,

profitability, and size, was examined for 60 observation for 12 companies by using multivariate ordinary least square regressions and SPSS Version 19 software application were used to test seven variables. Using SPSS package the basic OLS assumption were tested, summary of descriptive statistics for basic variables also presented, correlation analysis among basic variable also disclosed and finally detailed discussion of the regression were performed. Indeed the study used panel data in OLS regression, where time-series and cross-sectional observations were combined and estimated. In other word, in panel data setting several cross-sectional units were observed over a period of time. Hence, it is more useful in studying the dynamics of adjustment, and it is better able to identify and measure effects that are simply not detectable in pure cross-sections or pure time series data. Moreover, many variables can be more accurately measured at the micro level and biases resulting from aggregation over firms or individuals are eliminated.

As pointed out by Buferna et al, (2005) and Titman and Wessels (1988), capital structure studies examining the determinants of leverage based on total debt may disguise the significant differences between long-term and short-term debt. Therefore, in line with Buferna et al (2005) and Titman and Wessels (1988), this study will decompose total debt into long-term and short-term debt. The debt ratios that shall be considered are: Total Debt to Total Assets, Short-Term Debt to Total Assets, and Long-Term Debt to Total Assets ratios.

Therefore, the study used one gross measure of leverage and its two broad classifications as dependent variables and analyses their relation with independent variables.

Chapter 4

Data interpretation and analysis

In general, in this fourth chapter of the research, the data set defined in chapter three is tested for presence of econometric problems, presented and analyzed. Besides, in each sub-section brief interpretations are enclosed to explain the results obtained. The chapter, therefore, deals about; firstly the tests for fulfillment of basic OLS assumptions, secondly, the discussion of the summary of descriptive statistics results of all variables, thirdly the illustration and discussion of the correlation analysis among basic variables, fourthly the detail discussions on the regression results of various capital structure measures, and finally the presentation of summary of results of OLS analysis over different measure of leverage.

4.1. Tests for the CLRM assumptions

Various tests were run to make the data ready for analysis and to get reliable output from the research. These tests are intended to check whether the classical linear regression model (CLRM) assumptions, i.e. the OLS assumptions, are fulfilled when the independent variables are regressed against the dependent variables. The implication of the test, decision rules therein, test results and their discussion are discussed in the upcoming sub sections.

4.1.1. Tests of normality/test for normal errors

Normality test of data is applied to determine whether a data is well-modeled by a normal distribution or not, and to compute how likely an underlying random variable is to be

normally distributed. The following tests were undertaken for normality test. These are graphical (histogram and dot plot) and non-graphical (Kolmogorov-Smirnov) tests.

A. Graphical tests for normality

The best way to evaluate how far the used data are from Gaussian (normal) is to look at a graph and see if the distribution grossly deviates from a bell-shaped normal distribution.

By looking two graphs from the Appendix 3 the researcher has realized that the histogram looks symmetric and the normal p-p plot showed fairly consistent with that of the line and the residuals are normally distributed.

Graphical representations like histogram and p-p provide no hard evidence on how much the fitted values deviate from the normal values (degree of non-normality). It is also mandatory to see on the non-graphical tests of normality which are usually used by different researchers. The Kolmogorov-Smirnov test (K-S) used to test normality of the data for this research.

B. Kolmogorov-Smirnov test(K-S)

Table 4.1 shows the result of the Kolmogorov-Smirnov test for normality. Theoretically, if the test is not significant, then the data are normal, so any p-value greater than 0.05 indicates that the model data is fitted normally. On the other hand, if the test is less than 0.05 which proves significance, then the data are non-normal.

Table 4.1. Kolmogorov-Smirnov normality test

		Total Debt Ratio
N		60
Normal Parameters ^{a,b}	Mean	.463588
	Std. Deviation	.2113407
Most Extreme Differences	Absolute	.075
	Positive	.075
	Negative	-.050
Kolmogorov-Smirnov Z		.579
Asymp. Sig. (2-tailed) P value		.890

a. Test distribution is Normal.

b. Calculated from data.

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

Practically, in this study Kolmogorov-Smirnov test Table 4.1, p -value was found to be 0.890 which is greater than 0.05 accepting the null hypothesis that indicates the residual values is normally distributed.

4.1.2 Test of multicollinearity

Multicollinearity means that there is linear relationship between explanatory variables which may cause the regression model biased (Gujarati, 2004). In order to examine the possible degree of multicollinearity among the explanatory variables, pair-wise correlation matrixes of the selected variables (SPSS output of the multicollinearity) are shown in Table 4.2. Variable Inflation Factor (VIF) technique is also employed to detect the multicollinearity problem and strengthen the analysis.

Table 4.2 Pair-Wise Correlation matrix between explanatory variables

		Tangibility	Non-Debt Tax Shields	Growth	Earning Volatility	Age	Profitability	Size
Correlation	T	1.000						
	NTDS	.025	1.000					
	G	-.102	-.037	1.000				
	EV	.014	.514	-.021	1.000			
	A	-.034	-.084	-.174	-.248	1.000		
	P	-.467	-.001	.133	-.031	-.301	1.000	
	S	-.066	.093	.291	-.196	.383	.167	1.000

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

In Table 4.2 it can be seen that there is no strong pair-wise correlation between the explanatory variables (T, NTDS, G, EV, A, P, and S) except for size and tangibility, and size and non tax shields. As a rule of thumb, inter-correlation among the independents above 0.80 signals a possible multicollinearity problem (Gujatati, 2004). However the given high correlation is acceptable because if the firm's size is huge it tends to have high fixed asset and again if the firm size is huge there will be high probability to have high depreciation expense for that company. As concluding analysis, almost all variables have low correlation power and this implies no multicollinearity problem in the explanatory variables selected to determine capital structure of manufacturing Share Company in Addis Ababa.

Multicollinearity can also be identified by the Variance Inflation factor (VIF) technique, which is a statistic calculated for each variable in the model. Theoretically, a VIF greater than 10 may suggest that the concerned variable is multi-collinear with others in the

model and may need to be excluded from the model. Hence, the VIF result in Table 4.3, as none of the VIFs is excessively high, suggests that there is no perfect or strong collinearity between the explanatory variables.

Table4.3 Variance Inflation factor

Model		Collinearity Statistics	
		Tolerance	VIF
1	Tangibility	.720	1.389
	Non-Debt Tax Shields	.685	1.460
	Growth	.790	1.267
	Earning Volatility	.658	1.520
	Age	.568	1.761
	Profitability	.589	1.697
	Size	.590	1.694

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

4.1.3 Test of Heteroskedasticity

Heteroskedasticity is a systematic pattern in the errors where the variances of the errors are not constant (Gujarati, 2003 p387). Heteroskedasticity makes ordinary least square estimators not efficient because the estimated variances and covariance of the coefficients (β_i) are biased and inconsistent. Thus, the tests of hypotheses are no longer valid. Heteroskedasticity can also arise as a result of the presence of outliers (Gujarati, 2004 p390). Outliers are extreme values as compared to the rest of the data and are defined by the size of the residual in an OLS regression where all of the observations are used. Outlier detection involves the determination whether the residual value (error = predicted – actual) is an extreme negative or positive value. The OLS estimates are influenced by one or several residuals. In this study, the non-graphical methods of Cook-Weisberg Test/

Breusch-Pagan and White's Test of testing heteroskedasticity are used and the results obtained are presented in Tables 4.4 and 4.5.

Table 4.4 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.242166	Prob. F(7,52)	0.4311
Obs*R-squared	18.23023	Prob. Chi-Square(7)	0.1110
Scaled explained SS	14.40742	Prob. Chi-Square(7)	0.1444

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

In this case, both the F -and χ^2 test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the P-values are considerably in excess of 0.05. Hence, the insignificant result from the Breusch-Pagan-Godfrey test, i.e. p-value of 11.11 percent indicates that the regression of the residuals on the predicted values reveals insignificant heteroskedasticity at 1%, 5% and 10% levels of significance. Furthermore, White's test was also applied to test the presence of heteroskedasticity. White's test tests the null hypothesis that the variance of the residuals is homogenous. Therefore, if the p-value is very small, we would have to reject the null hypothesis.

Table 4.5 Heteroskedasticity Test: White

F-statistic	1.611575	Prob. F(35,24)	0.0121
Obs*R-squared	42.09069	Prob. Chi-Square(7)	0.1909
Scaled explained SS	33.26444	Prob. Chi-Square(7)	0.5521

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

Table 4.5 presents three different types of tests for heteroscedasticity and then the auxiliary regression in the first results table displayed. The test statistics give us the information needed to determine whether the assumption of homoscedasticity is valid or not, but seeing the actual auxiliary regression in the second table can provide useful

additional information on the source of the heteroscedasticity if any is found. In this case, both the F - and χ^2 versions of the test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p -values are considerably in excess of 0.05. The third version of the test statistic, ‘Scaled explained SS’, which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, similarly suggests in this case that there is evidence of no heteroscedasticity problem.

4.2. Summary of descriptive statistics

The following summary of descriptive statistics of all dependent and independent variables gives the general distribution of the data set. It measures the mean distribution, the standard deviations, minimums and maximums of the wide range of debt ratios and seven explanatory variables (abbreviated) for the 12 sample companies over the 5 years of study period.

Table 4.6 Summary of descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Total Debt Ratio	60	.1158	.9642	.473588	.2113407
Long Term Debit Ratio	60	.0195	.5719	.165975	.1451043
Short Term Debit Ratio	60	.0290	.8255	.313607	.1935483
Tangibility	60	.0511	.8069	.489585	.1882331
Non-Debt Tax Shields	60	.0074	.3526	.125033	.1157246
Growth	60	-.6134	.7863	.098545	.1893633
Earning Volatility	60	.1206	232.7000	20.771775	64.4524223
Age	60	4.0000	16.0000	8.333333	2.8916400
Profitability	60	-.3515	.2458	.030855	.1257939
Size	60	7.3886	9.0175	7.959857	.3792647
Valid N (listwise)	60				

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

The statistics summarized in Table 4.6 are a collection of measurements of two things: *location* and *variability*. Location tells one the central value of the variables (the mean is the most common measure of this). Variability refers to the spread of the data from the center value (i.e. variance, standard deviation).

The mean is the sum of the observations divided by the total number of observations. The standard deviation is the squared root of the variance. Indicates how close the data is to the mean. The variance measures the dispersion of the data from the mean. It is the simple mean of the squared distance from the mean. *Count* (N in the table 4.6) refers to the number of observations per variable. *Min* is the lowest value in the variable. *Max* is the largest value in the variable.

- I. The average total debt ratio of the manufacturing share companies in Addis Ababa City is found to be 47%. This is to mean that 47 cent of each Birr 1 asset in the balance sheet is obtained from debt related sources having long and short maturing nature. To put differently, 47 cent of each Birr 1 asset is claimed by external fund providers/creditors both in the short and long span of time in the future putting the remaining 53 cents claim to equity holders. However, the companies' mean total debt ratio ranges between the minimum value of 12% and maximum value 96%.
- II. The second and third rows of Table 4.6 also reveal that, out of the mean total debt ratio of 47% the long-term debt ratio takes part 16% of it and the short-term debt ratio shares the remaining 31%. In other words, the average short maturing debt funds account for about 31% of the total asset and 54%

(31%/57%) of the total debt whereas long term debt funds on the other hand account for 16% of the total assets employed and 28% (16%/57%) of the total debts. The results tell that manufacturing share companies in Addis Ababa city use more of short term debts than long term debts.

- III. The fixed asset to total asset ratio of the sample organizations ranges from 5% to 80%. The mean fixed asset to total asset ratio of 49% is the reflection of the fact that, manufacturing share companies in Addis Ababa city relatively invest evenly on fixed and current assets at a rate of 49% and 51% respectively.
- IV. The average non tax shields, enjoyed by manufacturing share companies in Addis Ababa city, from sources other than interest is found to be 12.5% of the total assets acquired. The ceiling of the tax coverage is 35% of the total assets and the smallest coverage on the other hand is 7.4% of total assets.
- V. The growth of assets over the five years study period has recorded an average rate of approximately 9.8% where all the companies score in between negative growth or asset deterioration of -6% and a highest growth score of 78%
- VI. Earning volatility is measured by standard deviation of the first difference in annual earnings so the value which is related to earning volatility in table 4.6 is described below by converting it to the original data. Thus business risk or earnings volatility of the firms in the industry recorded an average of Birr 4,534,767 (20 from Table 4.6) showing a big gap of Birr 17384632.1 between the highest volatility of Birr 17,384,867 (232.7 from Table 4.6) and the

smallest volatility of Birr 234.90(0.1206from table 4.6). This referred to as presence of high risk when operating in manufacturing sector in Ethiopia.

- VII. The age of the manufacturing share companies found in Addis Ababa city vary from 4 year to 16 years and the mean age is approximated as 8.33 years
- VIII. The average annual profitability of the manufacturing share companies under investigation is found to be 0.3%. Since profitability was measured by the ratio of operating income to total assets, the maximum attained average profitability rate is 2.4 % whereas the lowest recorded average profitability rate is -0.35%.
- IX. Natural logarithm of total sale was the measure of size of the company asset and the result in Table 4.6 which is related with size date is by converting the original data in to logarithm but the description below backed this result in to the original data accordingly, the average size, in terms of asset holding, by manufacturing sector companies is 91,171,059 according to the table 4.6. The size gap is 1,016,701,074 calculated by the difference between the maximum size 1,041,169,160 and minimum size of 24,468,086.

4.3. Correlation analysis

Correlation and regression analyses are related in the sense that both deal with relationships among variables. The correlation coefficient is a measure of linear association between two variables. Values of the correlation coefficient are always between -1 and +1. A correlation coefficient of +1 indicates that two variables are

perfectly related in a positive linear sense; while a correlation coefficient of -1 indicates that two variables are perfectly related in a negative linear sense. A correlation coefficient of 0, on the other hand, indicates that there is no linear relationship between the two variables. For simple linear regression, the sample correlation coefficient is the square root of the coefficient of determination. The correlation coefficient measures only the degree of linear association between two variables.

4.3.1 Correlation analysis of total debt ratio and the explanatory variables

The following correlation matrix predicts the likely relationship between the dependent variable total debt ratio and the explanatory variables; tangibility, non debt tax shields, earnings volatility, age of the firms, profitability, firm size, growth of the firms.

Table 4.7 Correlation Matrix of total debt ratio and dependent variables

	TDR	T	NDTS	EV	A	P	S	G	
Correlation	TDR	1.000							
	T	-.646	1.000						
	NDTS	-.311	.025	1.000					
	EV	-.018	.014	-.514	1.000				
	A	.182	-.034	-.084	-.248	1.000			
	P	.217	-.467	-.001	-.031	-.031	1.000		
	S	.264	-.066	.093	-.196	.383	.167	1.000	
	G	.272	-.102	-.037	-.021	-.174	.133	.291	1.000

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

The correlation matrix in Table 4.7 shows that total debt ratio (dependent variable) is correlated at -0.646 with Tangibility at 5 percent significance level, at -0.311 with non tax shield at 5 percent significance level, at -0.018 with earning volatility at 5 percent significance level, at 0.182 with age at 5 percent significance level, at 0.217 with profitability at 5 percent significance level and at 0.264 with size of the firm at 5 percent significance level, at.272 with growth of the firm. The results also show that age,

profitability, size and growth are positively correlated to total debt ratio, while tangibility, non tax shield and earning volatility have negative correlation with total debt ratio.

4.3.2. Correlation analysis of short-term debt ratio and the explanatory variables.

The correlation matrix in Table 4.8 below forecasts the expected signs of the relation between the second measure of leverage, short term debt ratio and all independent variables.

Table 4.8 Correlation Matrix of short term debt ratio and dependent variables

	STDR	T	NDTS	G	EV	P	S	A	
Correlation	STDR	1.000							
	T	-.480	1.000						
	NDTS	.053	.025	1.000					
	G	.304	-.102	-.037	1.000				
	EV	-.055	.014	.514	-.021	1.000			
	P	.491	-.467	-.001	.133	-.031	1.000		
	S	.411	-.066	.093	.291	-.196	.167	1.000	
	A	.132	-.034	-.084	-.174	-.248	-.301	.383	1.000

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

The correlation matrix in Table 4.8 shows that short term debt ratio (dependent variable) is correlated at -0.480 with tangibility at 5 percent significance level, at 0.053 with non tax shield at 5 percent significance level, at -0.055 with earning volatility at 5 percent significance level, at 0.304 with growth of the firm at 5 percent significance level, at 0.491 with profitability at 5 percent significance level and at 0.411 with size of the firm at 5 percent significance level, at 0.132 with age of the firm. The results also show that age, non debt tax shield, growth, profitability, and size are positively correlated to short term

debt ratio, while tangibility and earning volatility have negative correlation with short term debt ratio.

4.3.3. Correlation analysis of long-term debt ratio and the explanatory variables

The subsequent correlation matrix depicts the sign and extent of the relationship between the dependent variable long-term debt ratio and the explanatory variables. The correlation table below produced different and similar with some independent variables in terms of relationship signs compared to correlation table displayed on the above tables.

Table 4.9 Correlation Matrix between long term debt ratio and explanatory variables

	LTDR	T	NDTS	G	EV	A	P	S
Correlation LTDR	1.000							
T	-.235	1.000						
NDTS	-.415	.025	1.000					
G	-.051	-.102	-.037	1.000				
EV	.015	.014	.514	-.021	1.000			
A	.069	-.034	-.084	-.174	-.248	1.000		
P	-.347	-.467	-.001	.133	-.031	-.301	1.000	
S	-.183	-.066	.093	.291	-.196	.383	.167	1.000

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

The correlation matrix in Table 4.9 shows that long term debt ratio (dependent variable) is correlated at -0.235 with Tangibility at 5 percent significance level, at -0.415 with non tax shield at 5 percent significance level, at -0.051 with growth of the firm at 5 percent significance level, at 0.015 with earning volatility at 5 percent significance level, at 0.069 with age of the firms at 5 percent significance level and at- 0.347 with profitability of the firm at 5 percent significance level, at-0.183 with size of the firm. The above correlation matrix results can also show that age and earning volatility are positively

correlated to long term debt ratio, while tangibility, non tax shield and growth of the firm, profitability and size of the firm have negative correlation with total debt ratio.

4.4 Discussion of multivariate regression results

Prior empirical studies have traditionally used different estimation methods based on the types of data to investigate the determinants of firm's capital structure. The researcher used a panel regression model for the estimation in this study. Panel data involves the pooling of observations on a cross-section of units over several time periods. A panel data approach is more useful than either cross-section or time-series data alone. One advantage of using the panel data set is that, because of the several data points, degrees of freedom are increased and collinearity among the explanatory variables is reduced, thus the efficiency of economic estimates is improved (Harris and Raviv.)

The empirical data of the value of the variables are computed for 5 consecutive years (1997 – 2001E.C), using audited financial statements of the selected manufacturing share companies found in Addis Ababa city administrative which was collected from Ethiopian Revenue and Customs Authority(ERCA), Mexico branch. Therefore, panel data computed by multivariate ordinary least square (OLS) regression is carried out in this thesis to provide a comprehensive analysis about the determinants of capital structure of manufacturing share companies of Addis Ababa City. The SPSS application version 19 was used here to run the multivariate regressions.

In this section of the chapter the first part details the analysis of the capital structure as measured in gross terms i.e. total debt ratio. The later sections deal about the implications

of the same explanatory variables to the short run and long run by decomposing total debt into two as short maturing debt securities and long term securities.

Arguments made by Buferna et al (2005) and Titman and Wessels (1988) indicate that all regressions made based on proxies drawn from book value given similar results with those from market values. Buferna et al (2005) also assert that OLS Regressions have produced a very similar result with other methods like maximum likelihood and a censored Tobit models that have been used by other researchers. Therefore, as the results of OLS analysis and results of other models like Tobit model are very similar to each other, the researcher used multivariate OLS regressions in presenting the following results for simplicity. The results are displayed stepwise starting from total debt ratio model then to short-term debt ratio model, and finally to long-term debt ratio model.

4.4.1 Discussion of multivariate regression results of total debt ratio

$$\text{Total Debt Ratio (TDR)} = \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it}$$

The dependent variable is total debt ratio measured in terms of total debt to total asset ratio (TDR) and the explanatory variables are Tangibility (T), Non debt tax shield (NDTS), Growth (G), Earning volatility (EV), age of the firm (A), Profitability (P) and Size of the firm; measured with the most known proxies used in many related studies. The beta values (β_i) explain how much the variation in the dependent variable is explained by the estimated linear regression model. The regression based on the above

model produced result shown on the following table and interpretation of the result are displayed on the paragraphs subsequent to it.

Table 4.10 Model Summary TDR

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.815 ^a	.664	.619	.1304743	1.861

Predictors: (Constant), , T, NDTs, G, P, EV, A,S

Dependent Variable: Total Debt Ratio

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

Table 4.11 Regression Result of TDR and T, NDTs,G,EV,P,A and S.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	-.340	.422		-.807	.423		
T	-.742	.106	-.661	-6.978	.000	.720	1.389
NDTS	-.844	.177	-.462	-4.761	.000	.685	1.460
G	.163	.101	.146	1.617	.112	.790	1.267
EV	-.001	.000	.301	3.035	.004	.658	1.520
A	.006	.008	.081	.756	.453	.568	1.761
P	-.207	.176	-.123	-1.177	.245	.589	1.697
S	.150	.058	.269	2.572	.013	.590	1.694

b. Dependent Variable: Total Debt Ratio

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

Notes:

- On the **table.10** there are overall summaries of the R^2 and squared error of the residuals.
- The most important information is presented on **Table 4.11** of the regression output. On the first column, we have the names of the dependent variable (STDR) and that of the explanatory variables (T, NDTs, G, EV, A, P and S) and *_cons* is the constant term (intercept) of the regression. In the second column (Coef.), the values of the coefficients ($\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$) and (Std. Err.) indicates the standard errors associated with coefficients. The forth column (t) lists down the t-statistics used in testing whether a given coefficient is significantly different from zero. The fifth column sig.(P-value) shows the two-tailed p-values used in testing the null hypothesis making the coefficient zero

From Table 4.10 the adjusted R squared is 0.619 which indicates that about 61.9 percent of the variability of total debt to total asset ratio is explained by the selected firm-specific factors (Tangibility, Non Debt Tax Shields, Growth, Earning Volatility, Age, Profitability, Size). In other words, about 61.9 percent of the change in the dependent

variable is explained by the independent variables that are included in the model and the remaining 38.1 changes in the total debt ratio are because of other factors that are not included in the model. From Table 4.11 the researcher found the following estimated regression equation

$$\text{TDR} = -0.340 - 0.742(T) - 0.844(\text{NDTS}) + 0.163(G) - 0.01(\text{EV}) + 0.006(A) - 0.207(P) + 0.150(S)$$

The t-statistics and sig.(p-value) show that the explanatory variables such as tangibility, non debt tax shield, earning volatility and size of the firm are significant at 5 percent to mean they are variables which can affect the capital structure of the firm. Whereas variables: growth, age and profitability do not have a statistically significant relationship with capital structure.

4.4.1.1 Hypothesis testing and discussion of results

A. Total debt ratio with tangibility.

Research hypothesis 1 predicts a positive relationship between capital structure and tangibility. In contrast to the hypothesis, the regression showed significant negative relationship between total debt ratio and tangibility. The coefficient at 5 percent significant level for tangibility indicated that -0.742. This result contradicts with various previous research findings like Rajan and Zingales, Frank and Goyal suggest that firm's borrowing capability depends upon collateralizable value of assets (tangibility) and theories. Static trade-off theory, asymmetric theory and agency cost theory state the positive relation between leverage and tangibility.

This relation communicates the fact that every one percent change (increase or decrease) in the company tangibility keeping the other thing constant has a resultant change of 74.2% on the leverage measure total debt ratio in the opposite direction of change. The implication of this relationship might be that manufacturing share companies which has high value of fixed asset do not prefer to utilize debt related sources in satisfying additional need for fund.

B. Total debt ratio with non-tax shield

Non tax shield is found to have a negative relationship with total debt ratio and is statistically significant. This result is consistent with DeAngelo and Masulis (1980) argue that tax deductions for depreciation and investment tax credits are substitutes for the tax benefits of debt financing. As a result manufacturing share companies found in Addis Ababa city with large non-debt tax shields relative to their expected cash flow include less debt in their capital structures. Thus, Non-debt tax shield does influence on debt ratio and capital structure in manufacturing share companies in Addis Ababa city but indirect relationship between total debt ratio and non-debt tax shield exist.

C. Total debt ratio with growth of the firm

Research hypothesis 3 predicted that a positive relationship exists between total debt ratio and growth, and the regression result also showed that there is positive but insignificant relationship between debt ratio and growth of the firms. The positive result of beta coefficient linked to growth (G) accept the third null hypothesis disfavoring the alternate hypothesis that infer negative relationship between capital structure and growth variable. The positive result contradicts with agency cost theory but supports peaking order theory.

To conclude, growth is found to be insignificant factor for deciding the capital structure of manufacturing share companies found in Ethiopia.

D. Total debt ratio with earning volatility

The standard deviation of the first difference in annual earnings over mean of the earning is applied as a proxy for risk from the regression; the results show an inverse significant relationship between risk and total debt ratio in all the sample groups. The results are consistent with the hypothesis that firms with high variability in earnings have a greater risk not to meet their debt obligations and, thus, they should have lower debt ratio. The coefficient -0.01 (Table4.11) however, inform that other things being constant, at 5 percent level of significance a 1 standard deviation change in the earnings volatility produces reverse direction change to the extent of -0.01 on the total debt ratio.

This entails that manufacturing share companies found in Addis Ababa city with a high degree of volatility in their operating income maintain low level of total debt ratio to avoid possible barrier because of illiquidity (failure to meet their obligations). The opposite conclusion could hold true when the variability of the operating income is low or fairly stable.

E. Total debt ratio with age of the firms.

Research hypothesis five was formulated to estimate the relationship between age of the firm and leverage based on static trade-off theory. The result of beta coefficient linked to age variable accepted the fifth null hypothesis and proved the positive relationship between capital structure and age of manufacturing share companies found in Ethiopia.

In this study, age is estimated to have insignificant positive relationship with total debt ratio of manufacturing share companies of Addis Ababa. Based on the regression result once again age of the firm at 5% significant level is not significant factor for capital structure of manufacturing share companies of Addis Ababa city.

F. Total debt ratio with profitability of the firm

Research hypothesis six was formulated for the assessment of the relationship between leverage and profitability based on pecking order theory. In Table 4.11 Beta coefficient (-0.06) associated with profitability (P) accepted the hypothesis. In this study, profitability is estimated to be negatively related with total debt ratio and this relationship is found statistically insignificant at 5 percent significance level. Profitability also has not have significance influence to affect capital structure of manufacturing share companies found in Addis Ababa city.

G. Total debt ratio with size of the firm.

Research hypothesis seven was formulated to estimate the relationship between size and leverage based on static trade-off theory and agency cost theory. The result of beta coefficient (1.50) linked with size (S) from Table 4.11 accepted the null hypothesis and proved that there is a positive relationship between leverage and size of manufacturing share companies which are found in Addis Ababa city.

This study found size to be highly statistically significant at the 5 percent level and have positive impact on the manufacturing share companies total debt ratio. This result may suggests that larger manufacturing share companies in Addis Ababa tend to have higher

total debt ratios and borrow more capital than smaller manufacturing share companies do. From the above Table 4.11 the researcher can express it in figure, assuming other determining factors constant, for 1 unit increase in size, there is a 1.5 unit positive increase in debt to asset ratio. The observed result is consistent with the result of static trade-off theory and agency cost theory. Besides, major empirical studies also found a positive relationship between size and leverage. For instance: Titman & Wessels, (1988), Rajan and Zingales, (1995), and Booth *et al.*, (2001) provided the evidence of significant and direct relationship between size and total debt ratio. Since the result of size variable indicated a significant statistics, it is estimated that size does have significant role in making debt ratio and determining the capital structure of manufacturing share companies of Addis Ababa city.

4.4.2 Discussion of multivariate regression results of short-term debt ratio.

$$\text{Short term Debt Ratio (STDR)} = \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it}$$

Table 4.12 Regression Result of STDR and T, NDTS,G,EV,P,A and S.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	-.492	.480		-1.025	.310		
T	-.275	.121	-.267	-2.274	.027	.720	1.389
NDTS	0.90	.202	.054	.448	.656	.685	1.460
G	.216	.115	.212	1.884	.065	.790	1.267
EV	7.830E-5	.000	.026	.212	.833	.658	1.520
A	.014	.009	.210	1.583	.119	.568	1.761
P	.570	.200	.371	2.850	.005	.589	1.697
S	.097	.066	.190	1.461	.050	.590	1.694

b. Dependent Variable: Total Debt Ratio

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

Table 4.13 Model summary of STDR regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.794 ^a	.672	.572	.1483870	1.87

Predictors: (Constant), Size, T, NDTs, G, P, EV, A. Dependent Variable: Short Term Debt ratio

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

Notes:

- On the **table,4.13** there are overall summaries of the R^2 and squared error of the residuals.
- The most important information is presented on **Table12** of the regression output. On the first column, we have the names of the dependent variable (STDR) and that of the explanatory variables (T, NDTs, G, EV, A, P and S) and `_cons` is the constant term (intercept) of the regression. In the second column (Coef.), the values of the coefficients ($\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$) and (Std. Err.) indicates the standard errors associated with coefficients. The forth column (t) lists down the t-statistics used in testing whether a given coefficient is significantly different from zero. The fifth column sig.(P-value) shows the two-tailed p-values used in testing the null hypothesis making the coefficient zero.

The regression based on the above model produced result shown on the following tables (table 4.12 and 4.13) and interpretations of the result are exhibited in the paragraphs subsequent to it.

The aggregate measure of capital structure, total debt ratio, does not specifically put the effect of determinants of capital structure on the short maturing debt securities. To overcome this problem a regression is run among the previous seven explanatory variables and short-term debt ratio.

From Table 4.13 the adjusted R squared is 0.572 which indicates that about 57.2 percent of the variability of short term debt to total asset ratio is explained by the selected firm-specific factors (Tangibility, Non Debt Tax Shields, Growth, Earning Volatility, Age, Profitability, and Size). In other words, about 57.2 percent of the change in the dependent variable is explained by the independent variables that are included in the model and the remaining 42.8 changes in the short term debt ratio are because of other factors that are

not included in the model. From Table 4.12 the researcher found the following estimated regression equation.

$$\text{STDR} = -0.492 - 0.275(T) + 0.844(\text{NDTS}) + 0.216(G) - 7.830E5 (EV) + 0.014(A) + 0.57(P) + 0.097(S)$$

The t-statistics and sig.(p-value) showed that the explanatory variables such as tangibility, and profitability of the firm are significant at 5 percent to mean they are variables which can affect the capital structure of the firm. Whereas variables: non debt tax shield, earning volatility growth, age and size do not have a statistically significant relationship with capital structure of manufacturing share companies found in Addis Ababa city.

4.4.2.1 Hypothesis Testing and discussion of results

A. Short term debt ratio with tangibility.

Research hypothesis 1 predicts a positive relationship between leverage and tangibility. In contrast to the hypothesis, the regression showed significant negative relationship between short term debt ratio and tangibility. The coefficient at 5 percent significant level for tangibility indicated that -0.275. This result is inconsistent with that of static trade of theory but similar with that of total debt ratio to tangibility which is presented on the above part even if their coefficient is different.

When the result is interpreted it means that as the proportion of tangible asset in the asset structure of manufacturing companies increases by 1%, the proportion of short-term debt ratio in the capital structure is decreased by 27.5 percent (or vice versa). The implication

of this relationship may be that a manufacturing share company which has high value of fixed asset do not prefer to utilize short term debt related finance sources in satisfying additional need for fund.

B. Short term debt ratio with non-tax shield

Research hypothesis two predicts a negative relationship between leverage and non tax shields. But looking at beta coefficient and p-value (0.656) from Table 4.12 the result is inconsistent with DeAngelo and Masulis (1980) the hypothesis and Non tax shield is found to have a positive relationship with leverage and is not statistically significant. Thus, non tax shields does not influence on short term debt ratio and capital structure in Addis Ababa manufacturing share companies. But on total debt ratio it was significant factor to determine the capital structure.

C. Short term debt ratio with growth of the firm

Research hypothesis 3 predicted that a positive relationship exists between short term debt ratio and growth, and the regression result from Table 4.12 also showed that there is positive but insignificant relationship between short term debt ratio and growth of the firms. The positive result of beta (0.216) coefficient linked to growth (G) accepts the third null hypothesis. To conclude, growth is found to be also insignificant factor for deciding the capital structure issues manufacturing share companies found in Ethiopia.

D. Short term debt ratio with earning volatility

Hypothesis four predicted that there is a negative relationship between short term debt ratio and earning volatility. The results from Table 4.12 show an inverse and insignificant

relationship between earning volatility and short term debt ratio in all the sample groups. To conclude, earning volatility is found to be also insignificant factor for deciding the capital structure issues manufacturing share companies found in Ethiopia.

E. Short term debt ratio with age of the firms.

Research hypothesis five was formulated to estimate the relationship between age of the firm and short term debt ratio based on static trade-off theory. The result of beta coefficient (0.014) from Table 4.12 linked to age variable accepted the fifth null hypothesis and proved the positive relationship between short term debt ratio and age of manufacturing share companies found in Ethiopia.

In this study, age is estimated to have insignificant positive relationship with total short term debt ratio of manufacturing share companies of Addis Ababa. Based on the regression result once again age of the firm is not significant factor for capital structure of manufacturing share companies of Addis Ababa city.

F. Short term debt ratio with profitability of the firm

Research hypothesis six was formulated for the assessment of the relationship between short term ratio and profitability based on pecking order theory. Beta coefficient associated with profitability (P) rejected the hypothesis.

In this study, profitability is found to be positively related with total debt ratio and this relationship is found to be statistically significant at 5 percent significance level that is p value is 0.005 and the at the beta coefficient of (0.570) this is found on Table 4.12.

It implies that profitable firms in Addis Ababa manufacturing share companies maintain high short term debt to total asset ratio. This result is inconsistent with predictions of Pecking order theory which states that firms prefer to finance first with internal funds before raising external financing. Further this outcome is also inconsistent with the most previous studies (Titman & Wessels, 1988; Rajan and Zingales, 1995; and Booth *et al.*, 2001). But the result is consistent with static trade of theory and agency cost theory. Therefore, profitability has significance influence to affect short term debt ratio of manufacturing share companies found in Addis Ababa city.

G. Short term debt ratio with size of the firm.

Research hypothesis seven was formulated to estimate the relationship between size and leverage based on static trade-off theory. The result of beta coefficient linked with size (S) accepted the null hypothesis and proved that there is a positive relationship between leverage and size of manufacturing share companies in Addis Ababa city. But when we observe the p value it showed that firm size is statistically insignificant to affect the manufacturing share company's capital structure which is found in Addis Ababa city. So size of the firm is not significant factor for capital structure of manufacturing share companies of Addis Ababa city.

4.4.3 Discussion of multivariate regression results of long-term debt ratio

Likewise, the separate examination of regression result for long-term debt ratio model is offered in this section based on the model specified below.

$$\text{Long-term Debt Ratio (LTDR)} = \beta_1 + \beta_2 [T_{it}] - \beta_3[\text{NDTS}_{it}] + \beta_4[G_{it}] - \beta_5[\text{EV}_{it}] + \beta_6[A_{it}] - \beta_7[P_{it}] + \beta_8[S_{it}] + e_{it}$$

The regression based on the above model produced result revealed on the following table (Table 4.14 and 4.15) and interpretations of the result are exhibited in the paragraphs successive to it.

Table 4.14. Regression results of LTDR and T,NDTS,G,EV,P,A and S

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	.284	.330		.861	.393		
T	-.413	.083	-.535	-4.966	.000	.720	1.389
NDTS	-.708	.139	-.564	-5.105	.000	.685	1.460
G	-.069	.079	-.090	-.877	.384	.790	1.267
EV	-.001	.000	.265	2.345	.023	.658	1.520
A	-.009	.006	-.174	-1.432	.158	.568	1.761
P	-.743	.137	-.644	-5.407	.000	.589	1.697
S	.033	.046	.086	.725	.472	.590	1.694

a. Dependent Variable: Long Term Debit Ratio

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

Table 4.15 Model summary of LTDR regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.751 ^a	.605	.546	.1019831	1

a. Predictors: (Constant), Size, Tangibility, Non-Debt Tax Shields, Growth, Profitability, Earning Volatility, Age.

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C.

Notes:

- On the **table 15**, there are overall summaries of the R^2 and squared error of the residuals.
- The most important information is presented on **Table4.14** of the regression output. On the first column, we have the names of the dependent variable (LTDR) and that of the explanatory variables (T, NDTS, G, EV, A, P and S) and _cons is the constant term (intercept) of the regression. In the second column (Coef.), the values of the coefficients ($\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$) and (Std. Err.) indicates the standard errors associated with coefficients. The forth column (t) lists down the t-statistics used in testing whether a given coefficient is significantly different from zero. The fifth column sig.(P-value) shows the two-tailed p-values used in testing the null hypothesis making the coefficient zero

With the same rationale discussed in the above section of table 4.12, the aggregate measure of capital structure-Total debt ratio does not specifically put the effect of determinants of capital structure on the long maturing debt securities. To overcome this problem the above regressions are run between the seven explanatory variables and long-term debt ratio.

Adjusted R squared is the gauge of explanatory power and is 54.6 percent. It implies that 54.6 percent of the changes in the dependent variable long-term debt ratio can be explained by the changes in the listed explanatory variables.

From Table 4.14.the researcher understand that of the seven independent variables only four: Tangibility, non tax shields, earning volatility and profitability of the firm, are found to have a significant relationship with long-term debt ratio. On the other hand unlisted explanatory variables are found to have no statistically significant relation with long-term debt ratio. From Table 4.14 the researcher found the following estimated regression equation.

$$\text{LTDR} = 0.284 - 0.413(\text{T}) - 0.708(\text{NDTS}) + 0.069(\text{G}) - 0.011(\text{EV}) - 0.009(\text{A}) - 0.743(\text{P}) + 0.033(\text{S})$$

4.4.3.1 Hypothesis Testing and discussion of results from Table 4.14

A. Long term debt ratio with Tangibility.

Even if research hypothesis one predicts a positive relationship between leverage and tangibility. The regression analysis showed that in Addis Ababa manufacturing share companies, the relationship between tangibility and long term debt ratio is negative and significant at 5% level.

Tangibility has negative effect on long term leverage of manufacturing share companies in Addis Ababa. According to trade-off and pecking order theory, as tangibility increases, firms should be able to be financed by more debt. However, according to this finding, tangibility is inversely related with leverage. When the result is interpreted it means that as the proportion of tangible asset in the asset structure of manufacturing companies increases by 1%, the proportion of short-term debt ratio in the capital structure is decreased by 41.35 percent (or vice versa). The implication of this relationship may be that a manufacturing share company which has high value of fixed asset do not preferred to utilize long term debt related finance sources in satisfying additional need for fund.

B. Long term debt ratio with non-tax shield

Non tax shield has been insignificant factor for short term debt ratio analysis. It came as a remarkable determinant factor in the model to long term debt ratio. The coefficient and the P-value are -0.708 and 0.00, respectively, indicating that other things remaining constant, at 5% level of significance a 1% change in depreciation to total asset ratio impacts short term debt ratio by 70.8% in the opposite direction of the change. The negative coefficient of the attribute accepts the null hypothesis in the hypothesis number two that there is a negative relation between leverage and non debt tax shields. This demonstrates that as manufacturing firms get alternative non tax-shields like depreciation, they tend to minimize debt usage especially those debts which are in the form of long term debt. In other words, the more the company gets depreciation tax shields, the more it incline to appropriate long term securities that came from equity sources.

C. Long term debt ratio growth of the firm

Research hypothesis 3 predicted that a positive relationship exists between long term debt ratio and growth, but the regression result showed that there is a negative insignificant relationship between long term debt ratio and growth of the firms. The negative result of beta coefficient linked to growth (G) rejects the third null hypothesis. To conclude, growth is found to be insignificant factor for deciding the capital structure of manufacturing share companies found in Ethiopia.

D. Long term debt ratio with earning volatility

Hypothesis four predicted that there is a negative relationship between long term debt ratio and earning volatility. Earnings volatility forms an indirect relation with long-term debt ratio as signified from the coefficient- 0.001, and P-value 0.023. The results show an inverse relationship between risk and long-term debt ratio in all the sample groups, implying that firms with high risk levels exhibit low long-term debt ratios. In other words, they may avoid accommodating more financial risk by employing less long-term debt.

E. Long term debt ratio with age of the firms.

Research hypothesis five was formulated to estimate the relationship between age of the firm and long term debt ratio was to be positive. But the result of beta coefficient linked to age variable reject the fifth null hypothesis and proved the negative relationship between long term debt ratio and age of manufacturing share companies found in Ethiopia.

In this study, age is estimated to have insignificant negative relationship with long term debt ratio of manufacturing share companies of Addis Ababa. Based on the regression result once again age of the firm is not significant factor for capital structure of manufacturing share companies of Addis Ababa city.

F. Long term debt ratio with profitability of the firm

Research hypothesis one was formulated for the assessment of the relationship between leverage and profitability based on pecking order theory. Beta coefficient associated with profitability (PR) accepted the first null hypothesis.

In this study, profitability is estimated to be negatively related with Addis Ababa manufacturing Share Company's long term debt ratio as explained by beta of -0.743 and this relationship is found statistically significant at 5 percent significance level. It implies that profitable manufacturing share companies in Addis Ababa maintain low long term debt to asset ratio. This result is consistent with predictions of Pecking order theory which states that firms prefer to finance first with internal funds before raising external financing. Further this outcome is also consistent with the most previous studies (Titman & Wessels, 1988; Rajan and Zingales, 1995; and Booth *et al.*, 2001). Hence, with highly significance at 5 percent for inverse relationship between profitability and financial leverage, it may be concluded that highly profitable manufacturing share companies in Addis Ababa maintain low long term debt to asset ratio and they utilize more equity source compared to debt for making their capital structure.

G. Long term debt ratio with size of the firm.

Research hypothesis seven was formulated to estimate the relationship between size and long term debt ratio based on static trade-off theory. The result of beta coefficient linked with size (S) accepted the null hypothesis and proved that there is a positive relationship between long term debt ratio and size of manufacturing share companies in Addis Ababa city. But when we observe the p value it showed that firm size is statistically insignificant to affect the manufacturing share company's capital structure which is found in Addis Ababa city.

4.5. Summary of results of OLS analysis over different measures of leverage

The above three sub-sections, Section 4.4.1 to 4.5.3, discussed the individual analysis of the implications of the relation between the basic variables based on the regression results of the three models. The forthcoming paragraphs provide the thorough analysis of the combined implications of all the results from various models of capital structure.

Table 4.16: Summary of Results of OLS regression Analysis

The Variables	Total Debt Ratio	Short-term debt ratio	Long-term debt ratio
Intercept	-.340 (-0.807)	-0.492 (-.025)	0.284 (0.861)
Tangibility	-0.742** (-6.978)	-0.275 ** (-2.274)	-0.413** (-4.966)
Non Debt Tax Shields	-0.844** (-4.761)	0.090 (0.448)	-0.708** (-5.105)
Growth	0.163 (1.617)	0.216 (1.884)	-0.069 (-0.877)
Earnings Volatility	-0.01** (3.035)	7.83E-5 (0.212)	-0.001** (2.345)
Age	0.006 (-1.177)	0.14 (1.583)	-0.009 (-1.432)
Profitability	-0.207 (-1.177)	0.570** (2.850)	-0.743** (-5.407)
Size	0.150** (2.572)	0.097 (1.461)	0.033 (0.752)
R ²	0.619	0.572	0.546

Source: SPSS multivariate regression output from financial statements of sample companies, 1996-2001

Notes:

1. All dependent and most independent variables are scaled by total assets.
2. T-statistics are in parentheses.
3. ** Significant at the 5, level.
4. Short-term debt ratio refers to the ratio of short-term debt to total assets. Long-term debt ratio refers to the ratio of long-term debt to total assets. Total debt ratio refers to the ratio of total debt to total assets. Tangibility is defined as the ratio of fixed assets to total assets. Non debt tax shields are measured by the ratio of total depreciation to total assets. Growth is measured by the percentage change in total assets. Earnings volatility is measured by standard deviation of operating income. Profitability is defined as the ratio of earnings before interest and tax to total sales.. Age is measured by years of stay in business and Size is measured by the natural logarithm of assets.

Thorough examination of the above summary table (Table 4.16) provides the following insights.

- I. The Tangibility variable has a significant negative relation for all models of total debt ratio, short term debt ratio and long term debt ratio. It means that as manufacturing firms possess more fixed assets in their asset structure; their fund

preference gradually shifts to external debt sources of both short term and long term debt.

- II. The second variable i.e. non debt tax shields, is found to affect capital structure in the model for long term and total debt ratio. That is, it holds a statistically significant coefficient in both long and total debt ratio (the impact of long term debt ratio is greater than of short term debt ratio that is why debt ratio total also has the same trend with long term debt ratio for the variable non tax shield.) But for short term debt ratio it is statistically insignificant. This reveals that, the larger the amount of tax shields that emanate from sources other than interest payments for debt, the less the proportion of long term debt and total debt in the capital structure of Addis Ababa Share companies.
- III. Growth is a variable which is found insignificant for total debt ratio, short-term debt ratio and long term debt ratio models. As a result growth is not a factor which affects the capital structure of Addis Ababa manufacturing share companies.
- IV. The fourth variable is earning volatility. It is significant factor for both total debt ratio and long term debt ratio. It has negative significant relation with both long term debt ratio and total debt ratio.
- V. The next variable is profitability. Profitability has negative significant relationship with long term debt ratio but it has also significant relationship with short term debt ratio but on the opposite sign of long term debt ratio.

- VI. Age of the firm is just like growth variable does not affect all of the three measures of leverage significantly. This implies that age is not a variable which affect the capital structure of manufacturing share companies of Addis Ababa city.
- VII. Size of the firm is significant in the model for total debt ratio, i.e. it only affects the preference of long-term not short-term debt sources. This implies that large manufacturing share companies in Addis Ababa prefer debt funds (principally of long term maturity) to equity funds in financing their projects. While small sized ones prefer equity scheme to debt schemes.

Chapter 5

Conclusion and implication of the study

In the previous chapters this thesis introduced the main issues and hypothesis of the thesis, presented the theoretical and empirical literature, outlined the methodology followed in search for answer for the basic research hypothesis and described the result. This chapter deals with the conclusion, implication and recommendation of the study which is based on the regression analysis sections.

5.1. Conclusion

Since the seminal work of Modigliani and Miller (1958), the search for understanding capital structure choice continues to be an important area of research. In their efforts to understand the incentives for a firm to use debt, finance scholars have developed various theories and models. Each theory has explained facts about one or more factors that might determine a firm's capital structure. However, the findings of prior empirical studies have provided varying evidence related to the impact of these factors on capital structure. Moreover, the majority of these studies have been conducted in developed countries that have many institutional similarities. However, our knowledge of capital structure within developing countries that often have different institutional characteristics remains limited due to the lack of work that has been done in these countries.

The overall focus of this thesis rests up on adding some contributions to capital structure studies in Ethiopia in general and Addis Ababa city in particular. Accordingly, the thesis aimed at finding out which theoretical determinants of capital structure are relevant to

Ethiopian condition and identifying the potential capital structure theories that can best explain the capital structure heterogeneity in the manufacturing share companies operating in Addis Ababa, Ethiopia.

In this study, firm-specific determinants (internal factors) are examined. To achieve the intended goal, the researcher has formulated seven hypotheses. To test these hypotheses, total of seven variables; namely tangibility, non tax shields, growth, earning volatility, profitability, age of the firm and size of the firm were selected from prominent previous research works on capital structure. In addition, the researcher has taken five years audited annual financial statements of twelve manufacturing share companies of Addis Ababa city. For analysis, this study selected multivariate ordinary least square model. The capital structure of the these firms are measured by one aggregate measure of leverage total debt ratio and its two extensions short term debt ratio and long term debt ratio.

Separate analysis has been done to mitigate problems of omitting important variables from and including unnecessary variables in to analysis when taking total measure of capital structure alone. Therefore, short term and long term leverage measures were analyzed separately as long- and short-term debt ratio and arrived at the pure implications of seven independent variables to the same. Based on the findings discussed so far, the following key conclusions are drawn vis-à-vis the capital structure framework of manufacturing share companies in Addis Ababa, Ethiopia.

From the descriptive statistic, the average (mean) total debt to Asset ratio (TDR) of manufacturing share companies is found to be 47 percent, while 53 percent of the total

asset is left for equity financing. The results also tell that manufacturing share companies use more of short term debts than long term debts.

Concerning the correlation between variables in the different models employed, a positive correlation is maintained between capital structure total debt ratio and age of the firm, profitability, size of the firm and growth of the firm. On the other hand, a negative correlation is obtained between total debt ratio and tangibility, non debt tax shields and earning volatility. The short-term debt ratio model found the following relations; a positive relationship observed between short term debt ratio and non debt tax shields, growth of the firm, profitability, size and age of the firm but tangibility and earning volatility has a negative relationship with short term debt ratio. Finally the correlation schedule also disclosed that long term debt ratio has a positive relationship with age of the firm only and the remaining variables; tangibility, non debt tax shields, growth, earning volatility, profitability and size of the firm has a negative relationship with long term debt ratio.

Coming to conclusion of regression results, of the capital structure model of total debt ratio verified that about 61.29 percent of the change in the dependent variable (capital structure a measured by total debt to asset ratio) is explained by the independent variables that are selected and included in the model the only determinant factors affecting capital structure when measured in total debt ratio are tangibility, non debt tax shield, earning volatility and size. Whereas variables; growth, age and profitability do not have a statistically significant relationship with total debt ratio. Thus they are not significant factors to affect the capital structure of manufacturing share companies in Addis Ababa

city. But on the other hand tangibility, non debt tax shield, earning volatility, and size of manufacturing share firms play important role in using debt from financial institutions.

When similar variables are run against short term debt ratio, 57.1 percent of the change in dependent variable is explained by the independent variables that are included in the model. Two variables tangibility and profitability found to affect capital structure. This implies that non debt tax shields, earning volatility, age, and size are not significant to affect the capital structure of manufacturing share companies which related with short term debt ratio.

The regression result for the model of long-term debt ratio showed that 54.6 percent of changes in the dependent variable long term debt ratio can be explained by the change in the listed explanatory variables and it also informed that the only determinant factors affecting capital structure as measured by long-term debt ratio are tangibility, non debt tax shield, earning volatility and profitability. Whereas variables growth, age and size do not have a statistically significant relationship with long-term debt ratio.

It is proved that tangibility, non debt tax shields, earning volatility, profitability and size of the firm variables are the significant determinants of capital structure of Ethiopian manufacturing share companies (affecting leverage in either of both directions i.e. positively and negatively) in at least one out of the three models for capital structure employed in the study. While no clear and statistically proved relations are obtained for the variables growth of the firm and age of the firm in any of the capital structure models. As a result growth and age of the firm are not important factors to determine the capital structure of manufacturing share companies in Addis Ababa city.

5.2. Implication and recommendation of the study

This study can give information for external investors and shareholders who will be able to know the main variables that affect the capital structure and to observe manufacturing share company's performance before making the decisions of whether or not to buy or sell the stocks when secondary market is being practiced in Ethiopia.

In this study, the researcher has mainly examined the factors that influence financing mix of manufacturing share companies in Ethiopia. It might be interesting and crucial to extend this research to other sectors of the economy in the country.

A comparative analysis of capital structure decision of firms across developing countries may give enhanced picture about what really determines their capital structure decisions. Therefore, studies should be made across countries on determinants of capital structure decision in order to obtain clear understanding about whether and to what extent macroeconomic conditions influence capital structure decision of manufacturing share companies.

In this study important external (macroeconomic) variables like inflation, GDP growth, interest rate, corporate governance, legal framework and impact of the country's financial system could be added besides the firm-specific factors to determine capital structure of firms. But because of lack of time the researcher did not include the above mentioned factors so the researcher recommend for future researcher to accommodate the external factors which can affect capital structure of manufacturing share companies.

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Appendix 1

A. Manufacturing of garment, leather and shoe factories (first strata)

1. Addis Ababa Tannery S/Co paid-up capital **15,135,000** kolfe keraniyo kifile Ketema telephone 911201451 “industry”
2. ADDIS GARMENT S.Co. Share Company paid up capital **5,810,000.00** Lideta Kifile Ketema , tel. 113201287 “industry”
3. Adey Abeba Yarn Factory , Share Company paid up capital **23,670,000.00**, Nefas Silk Lafto Kifle ketema tel. 114423455 “industry”
4. Akaki Garment Share Company paid up capital **8,559,000.00** tel. 340154 “industry”
5. Anbesa Shoe S.C. **24,454,000.00** Lideta Kifile Ketema Kebele 05
6. ETHIO JAPANES SYNTHETIC TEXTILES S.C. paid-up capital **31,051,029.00** Lideta Kifile Ketema Kebele 13
7. Gulele Garment Share Company paid-up capital **12,000,000.00** kolfe keraniyo kifile Ketema TEL. 112703434 “industry”
8. Tikur Abay Shoe Sh.Co. paid-up capital **30,852,605.00** “Shoe & Glue Production” kolfe keraniyo kifile Ketema

B. Manufacturing of steel, glass and glass products, equipments, spare parts, plastic, furniture, paper and paper products factories (second strata)

9. Addis Ababa Bottle & Glass Share Company paid-up capital **26,105,000.00** telephone 792628 “industry”
10. **Akaki Spare Parts & Hand Tools S.C.** paid-up capital **142,298,000.00** Akaki Kefele Ketema TEL. 114340422 “industry”
11. Brick Products Processing S.C. paid-up capital **10,097,000.00** Addis Ketema Kefle Ketema “industry”
12. Al-kyd Resin S.C. paid-up capital **25,400,000.00** akaki kaliti Kefele ketema kebele 10 “industry”
13. Addis Block Production S.C paid-up capital **14,245,000.00** “industry”
14. Ecafco /Ethiopian Chip wood & Furniture S. C paid-up capital **4,338,000.00** Nefas Silk Lafto Kifle ketema TEL. 114421515 “industry”

15. Ethiopian Plastic Share Company paid-up capital **29,670,000.00** Kirkos Kifile ketema
TEL. 115517890 “ industry”
16. Saba Plastic Products Factory paid-up capital **35,567,000.00** “ industry”
17. MATADOR-ADDIS TYRE S.C. paid-up capital **255,041,369.00** Akaki Kefele Ketema
“industry”
18. Mega Net Corporation S.C. paid-up capital **10,000,000.00** “ industry”

C. Manufacturing of mineral water, beverages & soft drink factories (third strata)

19. Ambo Mineral Water S.C. paid-up capital **300,607,000.00** Kirkos Kifile ketema
“industry”
20. Ethiopian Mineral Development S.C. paid-up capital **128,525,000.00** Bole Kifle Ketema
TEL. 116613355 “ industry”
21. Moha Soft Drinks Industry SC CP. **105,000,000.00** Bole Kifle Ketema TEL.
614655/6614655 “ industry”
22. Awash Wine S.C. paid-up capital **30,850,000.00** Lideta Kifile Ketema Kebele 02
23. Ease Africa Bottling S.C. paid-up capital **66,160,600.00** TEL. 757603 “industry”

D. Manufacturing of food products and agro industry factories and others (fourth strata)

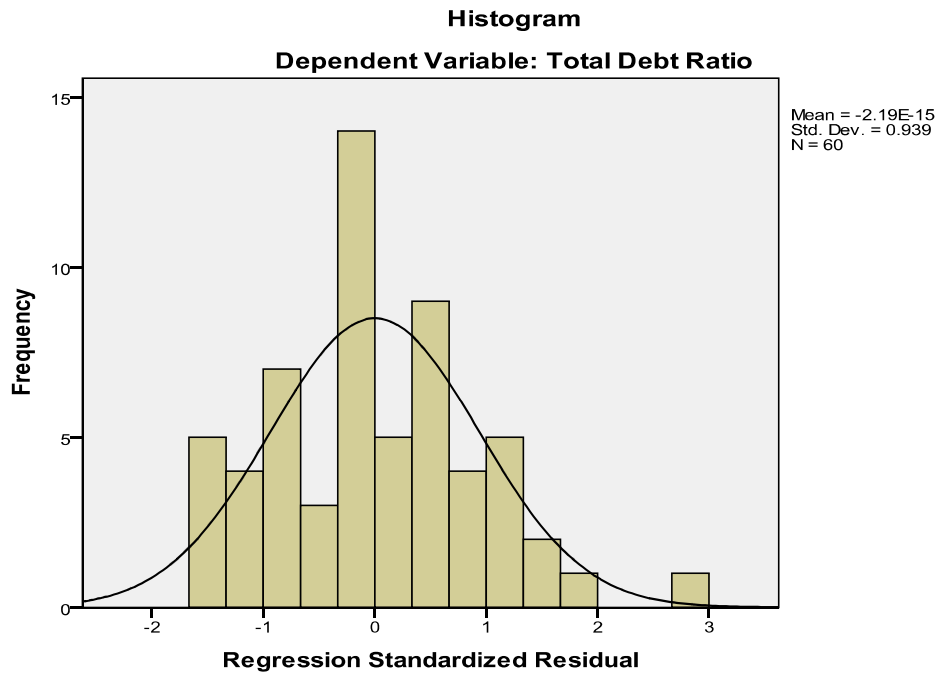
24. Addis Mojo Edible Oil Complex S.C. paid-up capital **149,692,000.00** Nefas Silk Lafto
Kifle ketema
25. Ethio-Horti S.C. paid-up capital **2,162,500.00** Bole Kifle Ketema TEL. 636750
“Agricultural Development”
26. **Ethiopian pharmaceuticals Manufacturing** S.C. paid-up capital **122,963,000.00**, Nefas
Silk Lafto Kifle ketema TEL. 113711000 “ industry”
27. Ethiopian Spice Extraction S.C. **10,609,000.00** Akaki Kefele Ketema “ industry”
28. **Kaliti Food S.C.** paid-up capital **88,734,000.00** Akaki Kefele Ketema “industry food
complex”
29. Rx Africa (Ethiopia) S.C. paid-up capital **17,748,612.00** Kirkos Kifile ketema “ industry”

Appendix 2 Sampling design

Types of Companies		Population		Sample Size	
		Frequency	Proportion	Frequency	Proportion
1. Manufacturing of garment, leather and shoe factories		8	0.28	3	0.25
	Group A	3	0.37	1	0.333
	Group B	5	0.625	2	0.67
	Group C	0	0	0	0
2. Manufacturing of steel, glass and glass products, equipments, spare parts, plastic, furniture, paper and paper products factories.		10	0.34	3	0.25
	Group A	4	0.4	1	0.33
	Group B	4	0.4	1	0.33
	Group C	2	0.2	1	0.33
3. Manufacturing of mineral water, beverages & soft drink factories		5	0.17	3	0.25
	Group A	0	0	0	0
	Group B	2	0.4	1	0.33
	Group C	3	0.6	2	0.667
4. Manufacturing of food products, agro industry factories and others		6	0.21	3	0.25
	Group A	2	0.33	1	0.33
	Group B	2	0.33	1	0.33
	Group C	2	0.34	1	0.33
Total Number		29	100	13	100

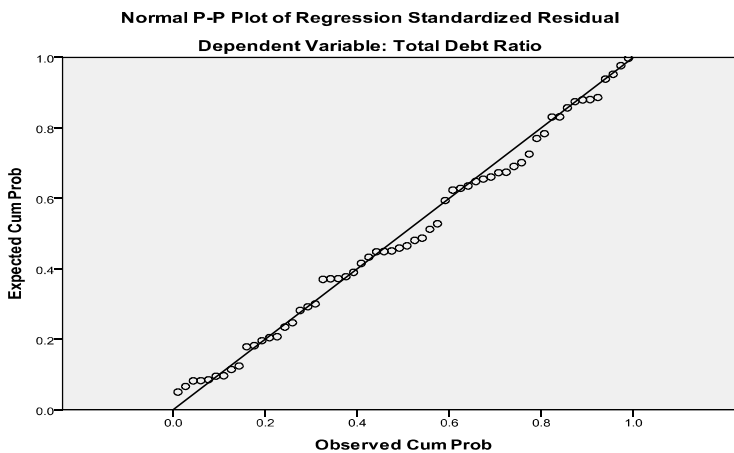
Appendix 3

Graph4.1. Histogram graph



Source: SPSS output from financial statements of sample companies, 1996-2001 E.C

Graph 4.2. Normal P-P plot regression standard residual



Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

Appendix 4. Summary of raw data

Case Summaries^a

	TDR	STDR	LTDR	T	NDTS	G	EV	A	P	Size
1	.4262	.2374	.1887	.5324	.2761	.0762	232.7000	4.0000	-.0003	7.6435
2	.4495	.2824	.1672	.5149	.3097	.1348	232.7000	5.0000	.0342	7.7064
3	.4696	.2930	.1766	.5083	.3385	.0131	232.7000	6.0000	.0001	7.7121
4	.4387	.2739	.1649	.4714	.3526	.0769	232.7000	7.0000	.0351	7.7489
5	.4912	.3353	.1559	.4525	.3358	.1435	232.7000	8.0000	.0231	7.8142
6	.7652	.2116	.5536	.5423	.0113	.4168	1.1008	5.0000	-.2519	7.6660
7	.3967	.1569	.2398	.5354	.0117	-.0286	1.1008	6.0000	-.2610	7.6538
8	.6834	.1115	.5719	.3859	.0094	.2483	1.1008	7.0000	-.1354	7.7768
9	.5893	.0290	.5603	.3995	.0090	.0319	1.1008	8.0000	-.0889	7.7908
10	.5202	.0583	.4618	.3261	.0074	.1758	1.1008	9.0000	-.0764	7.8748
11	.7274	.5838	.1354	.6734	.1062	.7863	.1333	5.0000	.0342	8.3152
12	.7274	.6206	.1069	.7233	.0974	.2242	.1333	6.0000	.0745	8.4254
13	.5404	.5084	.0321	.7264	.0745	.1973	.1333	7.0000	.1249	8.5209
14	.5266	.4440	.0502	.6118	.0935	.2287	.1333	8.0000	.1842	8.6337
15	.5128	.4433	.0485	.4957	.0855	.2414	.1333	9.0000	.1959	8.7537
16	.1412	.1515	.1226	.7302	.0380	.0002	3.5539	6.0000	-.0584	8.1294
17	.2741	.1514	.1676	.7565	.0471	-.0998	3.5539	7.0000	-.0817	8.0884
18	.3189	.0627	.2234	.7794	.0526	-.1170	3.5539	8.0000	-.0106	8.0404
19	.2862	.1708	.2193	.6621	.0544	.0830	3.5539	9.0000	-.0040	8.0780
20	.3900	.0430	.3845	.4990	.0971	-.6134	3.5539	10.0000	.0231	7.8702
21	.6370	.5024	.1346	.3974	.2743	.0742	.5098	11.0000	.0154	8.7001
22	.5918	.4790	.1128	.4092	.2676	.1421	.5098	12.0000	.0272	8.7667
23	.6222	.5228	.0933	.3979	.2672	.0968	.5098	13.0000	.0426	8.8109
24	.7833	.5988	.1845	.3082	.0597	.2282	.5098	14.0000	.0715	8.9234
25	.6440	.5185	.1259	.1259	.2443	.1949	.5098	15.0000	.0343	9.0175
26	.4364	.3651	.0713	.4489	.0515	-.1319	2.9656	5.0000	.1656	7.3886
27	.5243	.4600	.0643	.3855	.0435	.1612	2.9656	6.0000	.2439	7.4649
28	.4156	.3479	.0677	.3978	.0432	.0124	2.9656	7.0000	.2458	7.4706
29	.5315	.4610	.0705	.4253	.0421	.0333	2.9656	8.0000	.0326	7.4851
30	.3793	.3055	.0738	.4630	.0357	.1715	2.9656	9.0000	.0846	7.5668
31	.6104	.1486	.4618	.4846	.0292	.0689	4.4617	7.0000	.0941	7.6347
32	.6032	.1591	.4441	.4899	.0527	.0826	4.4617	8.0000	.0837	7.6721
33	.4578	.2087	.2492	.3679	.0407	.2902	4.4617	9.0000	-.0431	7.8210
34	.4754	.3018	.1736	.4395	.0371	.2370	4.4617	10.0000	-.0041	7.9384
35	.4972	.1283	.3689	.4375	.0377	.0087	4.4617	11.0000	-.0037	7.9423
36	.3851	.3421	.0430	.3738	.0347	.0247	.7808	4.0000	.2238	7.7487

37	.2036	.1631	.0405	.6506	.1080	.4767	.7808	5.0000	.1184	8.0310
38	.2081	.1765	.0316	.6357	.0638	.0413	.7808	6.0000	.1211	8.0483
39	.2379	.1994	.0390	.6048	.0605	.0714	.7808	7.0000	.1448	8.0804
40	.2250	.2055	.0195	.6398	.0618	.0709	.7808	8.0000	.0224	8.1124
41	.1348	.1152	.0196	.5360	.1902	.2190	1.5638	5.0000	.0523	7.8286
42	.1888	.1672	.0216	.5407	.2194	.0686	1.5638	6.0000	.0796	7.8595
43	.1884	.1540	.0343	.6089	.2782	-.0113	1.5638	7.0000	-.0652	7.8546
44	.1158	.8255	.0332	.5677	.2962	.0830	1.5638	8.0000	.0567	7.8922
45	.2464	.2090	.0375	.4785	.2747	.1783	1.5638	9.0000	.1484	7.9775
46	.2030	.1528	.0502	.8069	.1045	.1201	.8138	12.0000	-.0769	7.7763
47	.2341	.1884	.0457	.8049	.1323	.0749	.8138	13.0000	-.1301	7.8101
48	.3539	.1619	.1919	.7952	.1313	-.1694	.8138	14.0000	-.1908	7.7422
49	.4091	.2330	.1761	.7579	.0160	-.0290	.8138	15.0000	-.3515	7.7297
50	.4664	.2337	.2304	.7277	.0167	-.1343	.8138	16.0000	-.1669	7.6750
51	.8168	.5671	.2498	.1039	.0229	.1132	.1206	7.0000	.2359	7.8545
52	.8634	.5945	.2689	.1037	.0246	-.0418	.1206	8.0000	.1881	7.8367
53	.9142	.6503	.2639	.1011	.0247	.0495	.1206	9.0000	.1882	7.8588
54	.9000	.6413	.2587	.0511	.0101	.4797	.1206	10.0000	.1364	8.1426
55	.9642	.8067	.1575	.0588	.0085	.0636	.1206	11.0000	.2006	8.1711
56	.3072	.2298	.0774	.3508	.3048	-.1854	.5572	5.0000	.0100	7.5806
57	.3243	.2710	.0524	.4540	.2521	.3350	.5572	6.0000	.0144	7.7577
58	.4861	.4328	.0533	.4469	.3007	.0167	.5572	7.0000	-.0094	7.7650
59	.2935	.2386	.0549	.4294	.3049	.0749	.5572	8.0000	.0283	7.7989
60	.2608	.1807	.0801	.4413	.3261	.0327	.5572	9.0000	.0216	7.8133
Total	60	60	60	60	60	60	60	60	60	60

A limited to 100 cases

Source: SPSS out put from financial statements of sample companies, 1996-2001E.C

Appendix 5. Fundamental concepts for analysis

F-value: The value of F test explains the overall significance of a model. It explains the significance of the relationship between dependent variables and all the other independent variables. (Anderson et al., 2007, p.573)

T-Value: T value is used to determine the level of significance of regression coefficient. It is also known as test of individual significance. It explains the significance of relationship between dependent variable with each of the independent variable. If the t value is less than 3 than it supports the null hypothesis and if the t value is greater than 3 then it neglects the null hypothesis (Anderson et al., 2007, p.574).

P-Value: It is also used to determine the level of significance of regression coefficient. It measures whether the data supports the null hypothesis or not. If the P value is greater than .05 then null hypotheses can't be rejected and if the value of P is less than .05 than it rejects the null hypothesis. Usually we call it significance (Brooks, 2008 p.4)

95 % Confidence Interval: It gives two boundaries where a certain percentage of population is expected to lay e.g. 95% confidence interval means that 95 % of the population will lay between the upper boundary and lower boundary and half of the remaining values lie above the upper boundary and half of it lies below the lower boundary (Kohler, 1994, p.636).

Correlation: Correlation explains how two variables react to each other e.g. what change will occur in one variable with the change in other variable (Kohler, 1994, p.550).

Beta (β): The value of beta explain the change in the dependent variable with the per unit change in independent variable. It also explains the nature and strength of the relationship between dependent variable and independent variable (Malhotra, 2004, p.513).

A hypothesis will be accepted or rejected on the base of β value because value of β explains the relationship between dependent variable and independent variable. However, the significance of a relationship between dependent variable and individual independent variable will be tested by the T value and P value. F value and significance level (P-value) will test the authenticity of regression model for the data. Total variation in dependent variable because of regression model will be explained by the R square.