



**Effect of Debt Financing On Firms' Earnings In Ethiopia;  
Evidence from Manufacturing S.Co. In Addis Ababa**

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**A thesis submitted to the School of Graduate Studies of Addis  
Ababa University in partial fulfillment of the requirements for the  
Degree of Masters of Science in Accounting and Finance**

Feb. 2019,  
Addis Ababa

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Approval sheet

This is to certify that the thesis entitled, Effect of Debt Financing on Firms Earnings in Ethiopia: evidence from manufacturing S.Co. in Addis Ababa was carried out by Seid Ababor under the supervision of Abebe Yitayew (PhD), submitted in partial fulfillment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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**Declaration**

I, the undersigned, declare that this thesis is my original work and it has never been presented in any higher educational institutions. All sources and materials used for this thesis have been duly acknowledged.

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## Abstract

The purpose of this paper is to examine the effect of debt financing on firms' earnings of the manufacturing share companies in Ethiopia by taking evidence from manufacturing share companies in Addis Ababa. The study employs a panel data regression analysis. The dataset comprises eighteen manufacturing share companies covering a five-year period (2012-2016 G.C.) using firm level accounting data. The researcher was used return on asset (ROA) as dependent variable while debt asset ratio (DAR), debt equity ratio (DER) and time interest coverage (TIC) as independent variables and sales growth (SG) as a control variable. The result of the study revealed that debt to asset ratio(DAR), and time interest coverage (TIC) had a positive relationship and statistically significant effect on return on asset ratio (ROA), while debt equity ratio (DER) and sales growth (SG) had positive relationship and insignificant effect on return on asset of manufacturing firms in Ethiopia. The researcher has been concluded that debt asset ratio and time interest coverage ratio have significant effect on profitability, while debt equity ratio and sales growth have insignificant effect on the profitability of the manufacturing firms in Ethiopia.

**Key Words:** Debt financing, firms' Earnings, Return on Asset, Debt Asset Ratio, Debt Equity Ratio and Time Interest Coverage Ratio.

## Acknowledgement

I would like to express my gratitude to Almighty Allah for what he had given me from the family for supporting me in all aspect throughout my life beginning to an end.

Foremost I would like to express my sincere gratitude to my advisor Abebe Yitayew (PHD.) for the continuous support and guidance in writing of this thesis. Besides my advisor, I would like to thank all of my instructors in accounting and finance department of Addis Ababa University for imparting me valuable knowledge.

My gratitude goes to all my informative and organizations for providing me appropriate information and support to complete my thesis. Last but not the least I would like to thank my family for their support in all aspect to complete this thesis.

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## Acronyms

BLUE	Best Linear Unbiased Estimators
CLRM	Classical Linear Regression Model
EBIT	Earnings before Interest and Tax
CSE	Colombo stock Exchange
DCL	Degree of Combined Leverage
DEL	Degree of financial Leverage
DOL	Degree of Operating Leverage
DR	Debt Ratio
DER	Debt equity Ratio
EPS	Earnings Per Share
ICR	Interest coverage ratio
OLS	Ordinary Least Square
MM	Modigliani and Miller
ROA	Return on Assets
ROE	Return on Equity
SG	Sales Growth
WACC	Weighted average cost of capital

## Chapter One

### Introduction

#### 1.1 Background of the Study

In this modern business world capitals are able to move across border with far greater speed than ever before, and this leads firms to operate in tough competition. In such business environment capital structure decision making has become one of the most difficult tasks for the fate of the firms. Therefore, managers have to take into account making the cost benefit analysis while making a particular financing decision. In present business world the managers have to follow systems approach in their decision making because a decision taken in isolation can lead a firm to the verge of a disaster (Khalid, et al 2013).

Capital structure decision in finance term means the way a firm finances its assets across the mixture of debt, equity or hybrid securities. The concept is generally described as the combination of debt and equity that make the total capital of the firms. It is an important decision, how the assets of a firm are financed to generate revenue in order to be profitable and maximize value of a firm.

The proportion of debt to equity which leads to target capital structure is a strategic choice of corporate managers since such decisions could affect directly or indirectly financial performance of firms. To structure and effectively use its capital, a business firm must be able to devise various ways for selecting the best combinations of its capital which would be used in the company's operation to raise its productivity and or achieve performance (Uremandu, 2012).

Most of the business firms undertake their business operation at startup period by rising own capital. When the business needs additional investment firms find different financing choices

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Which include either internal source which is surplus cash or use outside financing sources based on cost benefit analysis. By taking into account a company's particular circumstances, management should decide what the most appropriate mix of internal and external funding i.e. how the company should structure the necessary capital to finance its activities. This leads to capital structure decision, which affects the financial performance of the firm and it is one of the tough challenges that firms face, (Abor, 2005).

However, not all business firms use a standardized capital structure hence they differ in their financial decisions under various terms and conditions (Uremandu, 2012). Firm's decision on the use of different forms of financing results into different capital structures which may have different impact on the firm performance. If a firm could desire to issue some bonds and use the proceeds to buy back some stock, thereby increasing the debt-equity ratio. Alternatively, it could issue stock and use the money to repay some debt, thereby reducing the debt-equity ratio (Allen, 2011).

Equity shares financing in which investors receive partial ownership in the company in exchange for their funds does not have to be repaid, while Debt is borrowing money from an outside source with the promise to return the principal, in addition to an agreed-upon level of interest. When there is a mix of debt and equity, the cash flows generated by the firms' assets and operations are split into two, a relatively safe stream that goes to the debt holders and a riskier one that goes to the equity holders. In this way, no matter the financing option chosen by the firm, the risky cash flow stream that goes to the equity holders must be maximized.

The company has to analyze the composition of capital structure to gauge its profitability. As noted by Raza, et. al. (2017) more levered firms enjoy more profits but on the other hand, the firm with large scale can only avail this facility, but the companies with low scale will face adverse effect of debt financing on profitability. Trade-off theory suggests that the debt is positively related to profitability, and the debt is also used as a tax shield source of financing.

According Goyal (2013), capital structure decision is critical for any firm for maximizing return to the various stakeholders and also enhances firm's ability to operate in a competitive environment. Badu (2012) stated that even though generally firms have a choice on how to combine debt and equity, managers attempt to ascertain a particular combination that will maximize profitability and firm's market value Ross (2002) also showed the importance of capital

structure decision to finance managers by stating that, finance managers try to find the capital structure that maximizes the value of the firm. His argument shows that capital structure decision is one of the crucial decisions that help to maximize firm's value. Jensen and Meckling (1976) in their Agency cost model suggest that there is an optimal capital structure which leads the Organization to have a better performance and it requires maintaining this optimal position.

Sivathaasan (2013) argued that, capital structure affects Cost of capital, Net profit, Earning per Share, Dividend payout Ratio, and liquidity position of the firm. All of these affect market value of the firm and these variables coupled with a number of other factors determine the value of the firm. Therefore, capital structure is a very important to the value of the firm.

The issue of capital structure, mix of debt and equity, decision has begun first in the literature was in 1958 when Modigliani and Merton Miller published their Article on the relationship between capital structure and firms' value.

Modigliani and Miller (1958) argued that under certain assumptions value of the firm is independent of how its assets are financed. Later in (1963) they revised their famous MM proposition by saying that the existence of tax subsidies on interest payments would cause the value of the firm to rise with the amount of debt financing by the amount of the capitalized value of the tax subsidy.

A number of theoretical and empirical studies have been conducted to explore the effect of capital structure on the financial performance of the firms. Various theories of capital structure such as trade-off theory, agency cost theory and pecking order theories have been developed after the establishment of Modigliani and Miller's theory.

In recent years, researchers come up with different perspectives of their studies; some revealed the positive relationship between capital structure and company profit while others revealed the negative relationship between the variables. Safiuddin (2015) and Adesina (2015) in their study results, they found that capital structure was strongly associated with firm's performance. Narayanasary (2015) and Mwangi (2013) concluded a negative relationship between capital structure and company profitability. On the other hand, Roden and Lewellen (1995), On the other hand, Baum et al. (2006), Berger and Bonaccorsi (2006), Margaritis and Psillaki (2007, 2010), showed a positive influence.

In Ethiopia manufacturing industries are the emerging sectors that have a tremendous contribution to growth and development of the country. The government of Ethiopia in its development policies has given attention by considering the strategic benefits of the manufacturing sector for sustainable growth and development of the nation. The manufacturing firms use debt financing on their capital structure either to solve their short term insolvency problem or for long term investment.

The disagreement between researchers on the effect of debt on profitability is not only in theoretical aspect but also in empirically studies. Factors such as sample size, countries, sectors, companies and periods of coverage, etc. have been mentioned by many researchers as for the contradiction of results in empirical studies.

The purpose of this research is to see the effects of debt financing on firm's earnings by using new data and sample.

### 1.2 Statement of the Problem

Capital structure decision is a vital task in corporate finance for almost all companies. It consists of debt and equity with proportions that differ between firms based on many factors and variables. Capital structure decision should be examined concerning how debt and equity mix in the firm's capital structure influence its market value. Debt to equity mix of the firm can have important implications for the value of the firm and cost of capital. In maximizing shareholder's wealth firm use more

Debt capital in the capital structure as the interest paid is a tax deductible and lowers the debt's effective cost. Further equity holders do not have to share their profit with debt holders as the debt holders get a fixed return. However, the higher the debt capital, riskier the firm, hence the higher its cost of capital. Therefore, it is important to identify the appropriate capital structure that minimizes the cost of capital while maximizing the value of firms.

Financial managers as well as some other stakeholders of all firms around the world conceivably will want to know the proper mix of debt and equity (capital structure) that maximizes a firm's earnings. They need to measure the influence of changing the capital structure of the firm on the profitability or the financial performance of their firm. The decision of capital structure choices is of paramount importance for firms and optimal capital structure is such a mix of debt and equity that maximizes the firm's value and reduces the weighted average cost of capital (Manson, 2014).

A number of theoretical and empirical studies have been conducted to explore the impact of debt financing on the corporate financial performance following Modigliani and Miller (1958). However, the issue remains controversial which attracts the attention of many researchers as Goddard, ET, and al. (2005), Rao, et al. (2007), Baum, et al. (2006), Weill (2008).

As empirical studies undertaken by various researchers reveals that debt having positive, negative and also both effects on the financial performance of firms.

In Ethiopia manufacturing companies are the emerging sector that contributes more to the growth and development of the country. Even though the firms are established and start their operation by equity finance, they employ debt for various reasons to maximize firm's profitability.

As to the researcher's knowledge there are relatively few researches in Ethiopia which investigated the relationship between debt financing and firm's earnings rigorously on manufacturing share companies by using different financial performance indicators in measuring profitability. Though, there are some studies undertaken on the impact of capital structure on company performance by employing other measures of financial performance, there is still a question in effect of capital structure on firm profitability.

The differences existed in empirical findings initiated the researcher to undertake this study and contribute in filling the gap. So this empirical research is another step in exploring the relationship between debt financing and firm's earnings of manufacturing industries in Ethiopia by using new data set.

### **1.3 Objective of the Study**

The main objective of this paper is to determine the effect of debt on firm's earnings of the manufacturing share companies in Ethiopia.

#### **1.3.1 Specific Objectives**

1. To see the relationship between debt to asset ratio and return on asset of manufacturing share companies in Ethiopia.
2. To determine whether debt to equity ratio has any effect on return on asset of manufacturing firms in Ethiopia.
3. To show if there is any relationship between interest coverage ratio and return on asset of manufacturing firms in Ethiopia.

## 1.4 Research Hypothesis

Based on the objective of the study the following hypothesis have been developed to find out the effect of debt financing on profitability a given firm in the study.

H1: There is a negative significant relationship between debt to asset ratio (DAR) and return on asset (ROA).

H2: There is a negative significant relationship between debt to equity (DER) ratio and return on asset (ROA).

H3: There is a significant positive relationship between interest coverage ratio and return on asset (ROA).

H4: There is a significant positive relationship between sales growth and return on asset (ROA).

## 1.5 Significance of the Study

This study that deals with the effect of debt financing on firm's earnings of manufacturing share companies in Ethiopia was beneficial for different stakeholders such as managers, stockholders and investors on capital structure decision making by providing better information. The researcher believes this paper has been added to the vast literature of corporate finance in general and capital structure decisions in particular by underpinning industrial difference grounds. The study would also bring sound arguments regarding the subject matter and be referred as evidence for international studies since most of previous studies were conducted on developed countries where there is active secondary market and better market efficiency.

## 1.6 Scope of the study

The manufacturing sector industries in Ethiopia are large in number and differ in types of business they engaged in. The scope of this study has been limited to large manufacturing share companies found in Addis Ababa. Due to budget and other resources constraint the study did limit to only 18 large manufacturing share companies found in Addis Ababa and covers a five years' data, (2012-2016). The researcher used return on asset (ROA) as key performance indicator of financial performance measurement since it showed what earnings were generated from invested capital and three dependent variables as leverage indicators.

## 1.7 Organization of the study

The study has been organized in five chapters. The first chapter was dealt with introduction statement of the problems, objectives of the study, research questions, methods adopted, and significance of the study, and scope and of the study. In the second chapter, different theoretical and empirical literatures that were related to the topics of the study had been reviewed. In the third chapter, the research design including the population and sampling techniques, and data collection instrument, measurements of dependent and independent variables and model specification had been included. The fourth chapter did contain presentation and analysis of data discussion of the results and analysis of the findings of the study. Finally, the fifth chapter was included the conclusion and recommendations for the study according to the findings.

## Chapter Two

### 2. Literature Review

#### 2.1. Capital Structure

Capital structure refers to the combination of debt and equity capital which a firm uses to finance its long-term operations. Capital in this context refers to the permanent or long-term financing arrangements of the firm. Capital structure refers to the kinds of securities and the proportionate amounts that makeup capitalization. It is the mix of different sources of long-term sources such as equity shares, preference shares, debentures, long-term loans and retained earnings. Capital structure is the permanent financing of the company represented primarily by long-term debt and equity.

According to Abor (2005) capital structure is defined as the mix of debt and equity that the firm uses in its operation, a mixture of different securities such as lease financing, use warrants, issue convertible bonds, forward contracts or issue of bond.

Mohammad and Jafer (2012) noted that firms can use either debt or equity capital to finance their assets. In the case where interest was not tax deductible, firms' owners would be indifferent as to whether they use debt or equity, and where interest was tax deductible; they would maximize the value of their firms by using 100% debt financing.

Brealey and Myers (2003) note a company can issue many of different securities in limitless combinations while attempting toward establishing a blend so as to enhance market worth.

The optimal capital structure is the one that maximizes the price of the firm's stock, and this generally calls for a debt ratio that is lower than the one that maximizes expected EPS (Brigham and Houston, 2009).

It is clear that stock prices are positively related to expected earnings but negatively related to higher risk. Therefore, to the extent that higher debt levels rise expected EPS. However, higher debt levels also increase the firm's risk, which raises the cost of equity and works to reduce stock prices.

## 2.2. Debt Financing

Debt financing refers to the borrowing of loans from other companies, banks, or financial institutions in order to support a business's operations. The loan principal is repaid at a later point in time, with some interest expenses being paid before the debt's maturity (Cheong, 2015).

Zietlow, et. al. (2007) notes that debt is one of the important items in the capital structure of companies and it provides a medium for corporate financing as firms borrow money in order to obtain the capital they require for capital expenditure. It represents any agreement between a lender and a borrower: notes, certificates, bonds, debentures, mortgages and leases. The main characteristic of debt financing is that the amount borrowed, plus interest, must be paid back to the providers of debt over a given period of time. The interest rate that must be paid on the borrowed money, together with a repayment schedule will be set out in the contract between the lender and the borrower. If the borrower does not fulfill their obligations set out in the contract, it can negatively impact on their credit rating, which in turn can make it more difficult for them to obtain funds in the future and it can also lead to financial failure. Even if a firm suffers financially and is not able to make the scheduled payments, they still have an obligation towards the debt providers (Shah & Hijazi 2004).

Debt can either be short-term or long-term. Short-term debt represents funds needed to finance the daily operations of the firm, such as trade receivables, short-term loans and inventory financing. These types of funds' repayment schedules take place in less than one year. Long-term financing is usually acquired when firms purchase assets such as buildings, equipment or machinery. The scheduled repayments for these funds extend over periods longer than one year (Zietlow, et. al. 2007).

A major reason for using debt is to enhance or 'gear up' shareholder earnings. When a company is financially geared, variations in the level of earnings due to changes in trading conditions generate a more than proportional variation in earnings attributable to shareholders if the interest charges are fixed.

Modigliani and Miller (1963), as company's debt ratio increases, it increases the firm's financial risk and pushes the cost of equity capital up, but because of the corporate taxes subsidies, of the cost of debt then the overall cost of capital falls. This model expands the first idea by including the risk of a firm to become bankruptcy after raising huge amount of fund using debt, they insisted

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that using more debts increases the threat of bankruptcy for a company. Cost of equity of a company goes up because of the higher risk of using debt that the company has and shareholder's perception about the future of the company on which they have invested.

Debt capital is usually cheaper than equity because the pre-tax rate of interest is invariably lower than the return required by shareholders. This is due to the legal position of lenders who have a prior claim on the distribution of the company's income and who, in liquidation, precede ordinary shareholders in the queue for the settlement of claims. Debt is usually secured on the firm's assets, which can be sold to pay off lenders in the event of default, i.e. failure to pay interest and capital according to the pre-agreed schedule.

The main advantage of debt financing over equity financing is that the lender does not take an equity position in the business. The owners retain full ownership and the lenders have no control over the running of the business. On the other hand, with equity financing the investors become part owners of the company and therefore have a say in how the business is managed

The downside of debt is that excessively high borrowing levels can lead to the risk of inability to meet debt interest payments in years of poor trading conditions. Shareholders are thus exposed to a second tier of risk above the inherent business risk of the trading activity. Larger and well established companies are likely to have a greater ability to borrow because they generate more reliable streams of income, enhancing their ability to make interest payments on debt capital. In practice, we often find that small developing companies that should not over-rely on debt capital are forced to do so through sheer inability to raise equity, while larger enterprises often operate with what appear to be very conservative gearing ratios compared to their borrowing capacities. Against this, we often encounter cases of over-g geared enterprises that thought their borrowing levels were safe until they were caught out by adverse trading conditions.

When a firm decides to use debt financing for its operations it's faced with a financial risk and it's referred to as a levered firm. Brigham & Houston, (2007) defined financial risk as that additional risk placed on common stock holders as a result of the decision to finance using debt. Financial risk is the probability that the earnings of the firm will not be as projected.

Debt is cheaper than the equity as the cost of debt is generally lower than that of equity and a tax advantage is attached with its use. In these circumstances, if total capital employed remains constant,

increase in financial leverage or use of debt implies that a relatively cheaper source of fund replaces a source of fund having relatively higher cost (Nagalakshmi, 2015).

Debt finance is considered a more risk source of finance than equity, as the interest on debt has to be paid whether the firm is making money or not interest is a fixed commitment. The risk is that if a firm is experiencing a difficult trading period, the interest and principal repayments will be an added strain on the firm's cash flows, and the risk of loss (of dividends or even total investment) to shareholder's increases.

Modigliani and Miller (1958), conclude that capital structure of firms' is not related to firm value. However, Meckling and Jensen (1976) argued on this point and proposed that the corporate performance is affected because leverage has an impact in capital structure of firms' and influenced financial decisions.

Financial leverage can increase return on equity or earnings per share as the after tax cost of debt is less than the return on investing the borrowed money. However, as the debt ratio or the debt-equity ratio increases the risk of leverage also increases, and change in company's situation can cause the leverage to have negative impact because of the method of financing.

### 2.3. Financial Performance

Financial performance refers to a firm's level of profitability as measured through different financial ratios, such as return on asset (ROA), return on equity (ROE), earnings per share (EPS), net income, and gross profit. Profitability is the primary goal of all business ventures. Without profitability the business will not survive in the long-run. So measuring current and past profitability is very important. A business that is highly profitable has the ability to reward its owners with a large return on the investment (Brealey and Myers 2003). Income is generated from the activities of the business. Asheghian (2012) states that financial managerial performance is defined in terms of profitability, debt management, and asset management. Debt management is measured by total debt to assets and long-term debt to equity. Profitability is measured by return on equity, return on assets, and return on investment. Asset management is measured by receivable turnover, total asset turnover, and inventory turnover. Empirical evidence suggests that survival correlates positively with satisfaction measures of financial performance (Geringer, and Hebert,

1991). Previous research suggests that for a firms' capacity to gain profit is highly correlated to the profitability and attractiveness of the industry operation (Elango & Sambharya, 2004).

According Ahmed (2015), to evaluate the financial performance of a company, one should use financial analysis to assessing the firm's profitability, leverage, solvency, and operational efficiency. The challenge is to know which ratios to choose and how to interpret the results. Operating income, cash flow from operations, and total unit sales can also be used to measure the financial performance of any firm..

### . Earnings

Earnings are the measure of profitability of the firm. It is the net profit remaining after all the firm's administrative, marketing, distribution and other operating costs have been deducted from gross profit. In this case earnings, represents the residual profit left, and available for distribution to the ordinary shareholders after provision has been made for all other financial obligations such as taxation, interest and any preference share dividend (Jim, 1999).

Ratana (2017) argues firm earnings measure the ability of the company concerned in generating net income (net profit) of principal operating activities for the company concerned. The higher net profit margin the better operation of an enterprise.

Maheshwari (2001) indicate that a firm's profitability is its capability to make profit

From all its business lines. This is an indication of how efficient the administration can Generate incomes using the capitals accessible in the market.

The accounting numbers which are mostly used to measure earnings are Return on Equity (ROA) Return on equity (ROE) and earnings per share (EPS) where, ROA measures how profitably a company employs its assets. It is mostly calculated by dividing net income after tax of the accounting period by total asset.

### 2.4. Debt financing and firms' performance

A high level of financial leverage allows shareholders to obtain a high return on equity, but they are also exposed to a higher risk of significant loss if the return on assets is low (Elangkumaran and Nimalathan, (2013). According to previous studies, debt affects cost of capital, ultimately

influencing firms profitability and stock prices (Higgins, 1977; Miller, 1977; Myers, 1984; Sheel, 1994). Researchers analyze the debt ratio and try to determine whether an optimal debt ratio exists or not. Optimal debt ratio is generally defined as the one which minimizes the cost of capital for the company, while maximizing the value of company. In other words, the optimal debt ratio is the one which maximizes the profitability of company. In addition, several researchers have studied firms 'debt use and suggested the determinants of financial leverage by reporting that firm 's debt-equity decision is generally based on a trade-off between interest tax shields and the costs of financial stress (Kim, 1997; Sheel, 1994; Sunder & Myers, 1999; Titman & Wessles, 1988; Upneja & Dalbor, 2001).

Financial leverage is a term used to refer to the usage of debt to finance activities and acquire additional assets in order to increase the expected return on equity. It is measured by dividing total debt by total assets or total debt by total debt and equity. Highly leveraged firms are those using substantially more debt than equity.

Financial leverage means a borrowing (debt) or loan the excess of which are reinvested in order get a greater return. If the interest paid on the loan is less than the firm's return on asset (ROA), then its overall return on equity (ROE) will be greater if it did not borrow (Laurent, 2005). Contrary, if the firm's paid greater interest than ROA, then its ROE will be less than if it did not borrow. (Andy et al., 2002) said financial leverage accounts for greater returns to the shareholder, but the potential loss is also higher, if the investment is not worthy and the firm still needs to pay the accrued interest and principal amount of loan. Damouri (2013) stated that the risk can be measured through leverage ratios and there are a variety of measures of the capital structure in which most essentials are book value measures, market value measures and semi- market value measures.

### 2.5. Theoretical Review of the literature

Prior to the emergence of modern capital structure theory there were conventional perspectives that believe using financial leveraging increases company's value. The traditional approach is the first view of capital structure. This approach is largely relying on a number of simplifying assumptions which are not mostly applicable in practice. Some of them are; ignoring the existence of tax, companies have only two choices to finance either through perpetual of debt or ordinary equity shares, no earnings and dividend payment growth and also the business risk associated with

firm operation considered unchanged overtime. Considering these assumptions, traditional approach arrived at a conclusion that companies should use the combination of debt and equity finance that minimizes its overall cost of capital in order to maximize the wealth of its shareholders (Denzil and Antony 2007)

Under the traditional capital structure, the value of the company is affected in the way it is financed. According to this model, change in capital structure directly affects the firm's market Value. Optimal capital structure exists at the point where weighted average cost of capital is minimized. There is optimized capital structure that minimizes the cost of capital (Gupta et al. 2011).

This traditional theory of capital structure pleads that value of the firm goes increase to a certain level of debt capital and after then it tends to remain constant with a moderate use of debt capital, and finally value of the firm decreases (Keshar, 2004). According Jim (1999), traditional capital theory assume all earnings are distributed as dividend and expected to remain constant, investors have the same information about future earnings, no taxation no transaction cost and business risk remain constant.

A moderate degree of financial leverage may increase the expected equity return but not as much as predicted by MM's proposition 2. But irresponsible firms that borrow excessively find shooting up faster than MM predict. Therefore, the weighted-average cost of capital declines at first, then rises. It reaches a minimum at some intermediate debt ratio (Brealey and Myers 2011, p: 430),

The traditional approach to capital structure suggests that there exist an optimal debt to equity ratio where the overall cost of cost of capital is the minimum and market value of the firm is the maximum. On either side of this point, changes in the financing mix can bring positive change to the value.

Frentzel (2013) with his study on capital structure theory since Modigliani and Miller, stated that the traditional view of capital structure assumes that there is a specific optimal gearing level that eventually minimizes the cost of capital and maximizes the value of the firm and shareholder's wealth.

Capital structures vary among firms within a given industry, which is a bit harder to explain factors for the differences. In an attempt to answer that question, academics and practitioners have developed a number of theories. Modern capital structure theory began by Modigliani and Miller (1958). Modigliani and Miller (1958) in their most influential finance article affirm that, in consideration of perfect capital market the capital structure does not have influence on the market value of the company rather the benefit of using debts will compensate by the decrease of company's stock. As a result, they argued in the efficient market the debt-equity choice is irrelevant to the value of the firm, known latter as irrelevant theory (Gupta et al. 2011). In supporting of their argument, they stated also the market value of a company depends on its expected performance and financial risk so that the market value of a company and its cost of capital are independent. But they came to this conclusion based on the assumption outlined in traditional approach and extra assumption of capital markets was perfect which was central to their model. (Denzil and Antony 2007).

Modigliani and Miller (1963: 433) subsequently corrected their capital structure irrelevance proposition for taxes. Because interest on debt is a tax-deductible expense, the firm effectively reduces its tax bill as it employs more debt. As the debt to equity ratio increases, the market value of the firm increases by the present value of the interest tax shield. This implies that the cost of capital will not rise, even if the use of leverage increases to excessive levels. Gupta et.al (2011), argue that the increasing debt results in an increased probability of bankruptcy to occur. Hence, the optimal capital structure reached when the marginal cost of bankruptcy is equal to be marginal benefit from tax sheltering provided by the increase debt ratio.

Further Miller (1977), extends the 1963 model by integrating the effect of personal taxes in to their model. This Miller's complex model considers the relationship between equity available for investors to invest in. According to his model, the higher interest rate on debt borrowed will cancel out the tax benefits of the additional debt, leaving the average cost of capital unchanged. As with their first model the Miller's model also did not take bankruptcy cost into account. Consequently, the result was similar to their first model (Denzil and Antony, 2007 P. 270).

Following the work of Modigliani and Miller (1958, 1963) on capital structure, the following conflicting theories of capital structure such as Trade-off, pecking order and Agency cost theories have been developed.

### 2.5.1. Trade-off theory

This theory originated from the study of Kraus and Litzenberger (1973), who formally introduced the interest tax shields associated with debt and the costs of financial distress into a state preference model.

The trade-off theory of capital structure postulates that managers attempt to balance the benefits of interest tax shields against the present value of the possible costs of financial distress (Myers 2001). The theory clarifies that some form of optimal capital structure should exist pursuant to the balance between the present value of interest tax shields and the cost of bankruptcy. Bankruptcy costs can be classified under direct and indirect costs. Direct costs of bankruptcy include, the administrative and legal expenses incurred by a firm that goes bankrupt. On the other hand, the indirect costs relate to the reduction in the market value of the firm due to the firm's inability to service its debt obligations.

There are four main predictions of the trade-off theory. Firstly, the trade-off theory predicts that firms will have a target debt ratio and that these ratios will differ from firm to firm. Secondly, the trade-off theory predicts that firms with relatively safe tangible assets will be less exposed to the costs of financial distress, and will therefore, be expected to borrow more. Conversely, firms with risky intangible assets will be more exposed to the costs of financial distress, and will be expected to borrow less. Thirdly, the trade-off theory predicts that higher marginal tax rates will be associated with higher levels of leverage. This is because of the tax deductibility of interest. Finally, the trade-off theory predicts that firms with more taxable income and relatively non-debt tax shields such as investment tax credits and depreciation will have more few incentives to borrow. Therefore, in order to take advantage of the interest tax shields, firms with fewer non-debt tax shields should be expected to borrow more. Conversely, firms with more non-debt tax shields should have less debt in their capital structure.

There is substantial evidence for the first three main predictions of the trade-off theory. The fourth prediction is moderately supported. Most studies show that firms with more non-debt tax shields have more debt in their capital structure.

(Mohammed (2014) argues in his study that Trading-off theory assumes that large firms are more diversified, have relatively lower business risk, better reputation, more stable cash flows and capable in repaying debts. This gives large firms easier access to the capital markets with negligible debt costs. Thus these firms are not easily expected to face financial distress and bankruptcy.

Titman and Wessels (1988), Rajan and Zingales (1995) and Fama and French (2002) affirm that higher profitability firms tend to borrow less that is inconsistent with the actual trade off prediction that higher profitability firms should borrow more to reduce tax liabilities.

### 2.5.2. Pecking order Theory

This theory was originated by Myers and Majluf (1984: 188) who demonstrate that a share issue is generally perceived negatively by the investors. This is because managers tend to issue shares when they are overpriced. In a simple term, the pecking order theory suggests that in order to avoid the information effects of new share issues, a firm is more likely to issue debt than equity. This prediction is conditional on the managers' belief that their firm's securities are underpriced.

The pecking order theory implies that managers will follow the path of least resistance, and that they will work down a pecking order by opting to issue the cheapest form of financing. In this case, firms will opt for retained earnings as it has no adverse selection problems. When retained earnings are exhausted, the firm can then issue debt. When it does not make any more sense to issue more debt, equity can be issued as a financing source of last resort.

According Brealy and Mayer (2011), pecking-order theory starts with information asymmetry; it has been expected that managers know more about their companies' prospects, risks, and values than do outside investors. For example, when a company announces an increased regular dividend, stock price typically rises, because investors interpret the increase as a sign of management's confidence in future earnings. In other words, the dividend increase transfers information from managers to investors. This information Asymmetry affects the choice between internal and external financing and between new issues of debt and equity securities.

The pecking order theory suggests that firms with few investment opportunities and high free cash flows will have low debt ratios. Conversely, high growth firms with low free cash flows will have high debt ratios. A number of studies have confirmed the existence of the pecking order theory. Rajan and Zingales (1995) utilize a data set from seven industrialized countries, and they find some evidence for the pecking order theory in the form of a negative association between leverage and profitability.

According to Frank and Goyal (2003), this raises questions as to whether the theory is broadly applicable. Using funds flow data for a broader cross-section of American firms, they discover that net equity issues track the financing deficit more closely than net debt issues. This finding offers contrasting evidence to the predictions of the theory.

Flannery (1986) says debt maturity can reduce the costs of information asymmetry providing as signaling device between firm managers and investors. He theoretically proves that if bond market investors cannot isolate good firms from bad ones, good firms will consider their long term debt to be under- priced and will, therefore, issue short-term debt. Conversely in the same circumstances, bad firms will sell over-priced bonds.

An optimal strategy to a firm is to use a maximum amount of financial leverage. This reveals that the greater the amount of debt, the greater the tax shield benefit and the greater the value of the firm. In other words, keeping other things the same the greater the financial leverage the lower the cost of capital of the firm (Modigliani and Miller 1963). According to Myers (1984), due to adverse selection, firms prefer internal finance than external finance. When outside funds are necessary, firms prefer debt to equity because of lower information costs associated with debt issues. Equity is rarely issued.

### 2.5.3. Agency Cost Theory

The agency theory is based on the notion that managers will not always act in the best interest of the shareholders. Jensen and Meckling (1976) further elaborate on this concept by identifying two main conflicts between parties to a company, firstly, between the managers and shareholders, and secondly, between the shareholders and the creditors. In the first instance, managers are tempted to pursue the profits of the firms they manage to their own personal gain at the expense of the

shareholders. In the latter instance, debt provides shareholders with the incentive to invest sub-optimally.

Use of debt in capital structure of the firm leads to agency costs that arise as a result of the relationships between shareholders and managers, and those between debt holders and shareholders (Peter, 2017).

Myers (1977), notes that when firms are on the verge of bankruptcy, there is no incentive for shareholders to invest more equity capital, even if positive NPV projects are available. This is because the value derived from the projects will accrue mainly to the debt holders. The implication is that high debt levels may result in the rejection of value increasing projects.

However, Jensen and Meckling (1976) observed that managers do not always run a company to maximize shareholders' wealth since their interest is never exactly the same as shareholders. Harris and Raviv (1991) argue that if an investment yields returns higher than the face value of the debt, the benefits accrue to the shareholders. Conversely, if the investment fails, the shareholders enjoy limited liability by exercising their right to walk away. This leaves the debt holders with a firm whose market value is less than the face value of the outstanding debt. This result in managers to exert insufficient work effort, indulging in perquisites, choosing input or output that suit their own preference or otherwise failing to maximize company's value. Additionally, the management who is the decision making body, tends always to pursue its own interest instead of those of the shareholders in a way that managers tend to spend the free cash flow available to fulfill their need for self-reputation and prestige rather than returning it back to shareholders (Jensen and Ruback,1983).

An attempt to resolve such agency problem is generally impossible for the shareholders or management at zero cost to ensure that the management will make optimal decision from shareholders' viewpoint (Jensen and Meckling, 1976). Thus, to minimize such conflict of interest, in most agency relationships shareholders limit divergences from their interest by establishing appropriate incentives for managers and by incurring monitoring cost designed to limit the aberrant activities of the managers. However, it should not be overlooked that these costs will be higher whenever shareholders want to make sure the manager acts in their interest and to control their decisions more.

As a counter action to this shareholder's activity, sophisticated lenders tend to monitor the company's behavior. Consequently, costly monitoring devices will be included in to debt agreements, thereby increasing the cost of capital offered to the company. Thus, company with relatively higher agency costs tends to maintain lower level of debt. However, the agency problem can be mitigated if the debt is secured with collateralize able tangible assets (Daniel, 2011).

The use of debt in a capital structure reduce the agency cost incurred by shareholder which in turn to enhance the company's performance by forcing management to focus on profitable investment. However, the increasing use of debt after a certain level of debt will be limited by a monitoring action taken by debt holders and by problems related to cost of capital; cash problems, a cause for bankruptcy, and an opportunity cost to forgone profitable investment. Therefore, a testable prediction of this model is that increasing the leverage ratio should result in lower agency costs of equity and improved company financial performance all else equal held. But, when leverage becomes relatively high, further increases generate agency cost of debt arising from conflicts between debt holders and shareholders. Finally, optimal capital structure obtained by trading off the agency cost of debt against the benefit of debt.

### 2.6 Review of Empirical studies

A firm's performance is apparently affected by numerous factors including the capital structure which could be considered as one of the prominent factors among them. Numerous studies have been conducted to explore the type of the relationships between a firm's performance and debt financing. These studies produced varied or mixed results as, for example, some found a positive, others a negative, or that no relationship exists between capital structure and the Performance of the firm.

These differences clearly shown among the researches held in developed countries who have well established markets, in which companies could gain an efficient access to raise capital, and in developing countries where their markets are emerging or not well developed for capital access and as well for restructuring their capital composition. Furthermore, the residing difference not only restricted to the market situation of respected countries but also observed within same level of market situations as researches indicated both the direct and inverse relation between the leverage and financial performance.

Hutchinson (1995) claimed that debt to equity ratio had a positive effect on the firm's ROE provided that earnings' power of assets exceeds the average cost of debt to the designated firm. Taub (1975) also found a significant positive relationship exists between debt ratio and profitability measures used. Besides, positive association between debt ratios and profitability of the firm were identified by Nerlove (1968), Baker (1973) and Petersen and Rajan (1994).

Ayodeji, et. al. (2016) examined the impact of leverage on earnings of manufacturing firms in Nigeria. Using multiple regression analysis, 500 firm year observations were analyzed. The findings of the study showed that there is a positive relationship between firms' earnings and debt financing. Raza, et. al. (2017) analyzed the impact of capital structure on profitability of companies selected from non-financial sector of Pakistan including public and private sector. The financial data of 22 companies had been observed from 2010-2015. Findings revealed that debt equity ratio is significantly positively related to firm's earnings, but insignificantly negatively related to ROE. Debt to asset ratio is insignificantly positively related to ROE but significantly negatively related to EPS.

Samson et, al. (2017) investigated the effect of capital structure on the performance of the listed manufacturing firms in Nigeria from (2004-2013), tried to establish that capital structure has significant effect on return on asset (ROA) and earnings per share (EPS) and showed that capital structure has no significant effect on return on equity (ROE). The study also revealed that sales growth has significant effect on capital structure. It has been recommended the management should work very hard to maximize the capital structure of quote firms in order to increase return on equity and earnings per share of the firm. Similarly, the research undertaken by Kumar (2017), to determine the relationship between capital structure and return on asset on selected automobile companies in India, revealed that debt equity ratios has a positive relationship with return on asset.

Frezewed (2016) on corporate capital structure and its impact on firm's profitability, on selected manufacturing firms in Ethiopia employing five-year data (2010-2014). The result reveals that short term debt ratio, long term debt ratio and interest coverage ratio have positive and significant relationship with profitability. Similarly, the study made by Endalkachew (2015) shows similar observation.

Abbasali, et. al. (2012) investigated the impact of capital structure on the financial performance of companies listed in the Tehran Stock Exchange. In their study, variables of (ROA), (ROE) and

(EPS) were used to measure the financial performance of companies. Results suggest that there is a significant negative relationship between debt ratio and financial performance of companies, and significant positive relationship between asset turnover, firm size, asset tangibility ratio, and growth opportunities with financial performance measures. However, the relationship between ROA and ROE measures with the firm age were found in their study to be insignificant.

Nimalathan and Valeriu Brabete (2010), in their study of manufacturing companies listed in Colombo Stock Exchange Sri Lanka showed that the debt-equity ratio is positively and strongly associated to all profitability measures used (Gross Profit, Operating Profit and net profit ratios).

Praha Lathan, and Ranjani, (2011), on the other hand, assessed the Influence of capital structure choice on the firm performance and found that capital structure measured by short term debt to total assets, long term debt to total debt, total debt to total assets has no significant impact on the firm's performance measured by ROE and ROA. Remarkably, these results are at odds with other findings of the finance literature which document a significant positive or negative impact of capital structure on the firm's performance.

Kaumbuthu (2011) investigated the relationship between debt to equity ratio and return on equity (ROE) for the industrial sector in the Nairobi Securities Exchange (NSE). The study found a negative relationship between debt to equity ratio and ROE.

When investigating the effect of debt to equity ratios as performance measures of Kenyan firms, Maina and Kondongo (2013) found significant negative relationship between capital structure and all dependent variables used to measure the performance of the firm. They confirmed that capital structure is relevant in assessing the performance of the firm.

It is important though, to note not all bankruptcy costs are measureable, direct costs (Warner, 1977). For direct costs of bankruptcy costs arise, it is sufficient that there be transaction costs associated with negotiating disputes between claimholders. But whether indirect costs arise depends upon the market setting and industry characteristics. Bankruptcy would seem to be irrelevant when the bankrupt and non-bankrupt firm might each operate in the same way, engaging in identical activities to maximize the wealth of their claimholders (Warner, 1977).

Rajni Saini (2012) had investigated the influence of financial leverage on shareholders return and market capitalization. Empirical evidence of telecommunication sector companies, India. To

measure this, financial statements of seven (07) listed firms have been analyzed over a period of 07 years. Descriptive Statistics, Correlation and t-test has been conducted to find out nature of relationship and the state of influence of the financial leverage on shareholders

Return and market capitalization individually. The research evidence of the study indicates that there is positive relationship between financial leverage and shareholder return but negative relationship between financial leverage and market capitalization

Kayoed (2014) conducted a study on the effect of capital structure on firm performance in Nigeria using the panel data of 10 companies from 2003 to 2012. Researcher used descriptive and regression technique was employed to test the relationship between performance variables of return on asset and return on equity against capital structure variables of total debt to total assets, total debt to equity. In his study results he revealed that capital structure was negatively related to firm performance.

The study undertaken by Tailab (2014) in America used a sample of 30 energy American firms for a period of nine years from 2005 to 2013 to test the effect of capital structure on profitability of energy American firms and found the negative relationship between debt ratios and performance variables of return on equity (ROE) and return on asset (ROA) while company size in terms of sales indicated a negative effect only on return on equity (ROE) of the energy American firms. Researcher used multiple regression method to analyze his study data where 10% of ROE and 34% were predicted by independent variables of short term debt, long term debt, total debt to equity ratios and firm size measured by company sales.

Another study Leon (2013) was about the impact of capital structure on financial performance of the listed manufacturing firms in Sri Lanka. He used a panel data of 30 listed manufacturing companies from 2008up to2012 to measure the relationship between the variables. The data were analyzed and hypotheses were tested using correlation and regression analysis using SPSS. The findings of his study revealed that, there is a significant negative relationship between leverage and return on equity at the same time the relationship between leverage and return on asset showed no relationship.

Pathak (2011) in his study found that the level of debt has significant negative association with firm performance which is not in accordance with the findings of many studies done for western

economies but consistent with some of the studies done for Asian countries. One important reason of this conflicting result can be the high cost of borrowing in developing countries like India in comparison to western countries. Khan (2012) research results were consistent with the Jensen and Meckling (1975) agency cost model and didn't found any significant impact of efficiency on leverage.

Study by Marietta (2012) in Kenya listed companies used multiple regression analytical models to measure the relationship between independent variables of institutional debt and institutional equity as capital structure variables against the dependent variables of ROA and ROE as firm performance variables and revealed that there is a negative relationship between total debt and firm performance. In terms of relationship between equity and firm performance, his study revealed that there is a significant positive correlation between return on equity (ROE) and total equity using Pearson correlation. For instance, an empirical research on Swiss companies to examine determinants of capital structure using a panel data from 106 companies for the period of ten years indicated profitability to be negatively related with leverage. The study undertaken by Mahfuzah (2012), on capital structure and firm performance taking a sample of 237 Malaysian listed companies on the Bursa Malaysia Stock exchange during 1995-2011. The results indicate that return on assets (ROA), return on Equity (ROE) and earnings per share (EPS) have negative relationship with short term debt (STD), long term debt (LTD), total debt (TD). Moreover, there is positive relationship between the growth and performance for all the sectors. Reports that there is significantly positive relationship between short term debt (STD) and long term debt (LTD).

Several studies undertaken seeking to know whether capital structure has an impact on performance also reaches to the same conclusion. Among them, a study evidenced from 100 firms in national stock exchange of India (Gupta et al. 2011), study evidenced from 77 non-financial Bangladesh's four most leading sector firms (Chowdhury and Chowdhury, 2010), study evidenced from 30 listed companies traded in Colombo stock exchange Sri Lanka. Pratheepkanth, (2011), and studies evidenced from non-financial firms listed on the Nigerian stock exchange by Adenkule and Sunday (2010), and by Ossuji and Odita (2012) stating firms' capital structure has a negative impact on financial performance; in other word companies that have good performance would likely to have low debt.

Toraman (2013) examined manufacturing companies in Turkey by using regression model to measure the relationship between capital structure and company profitability using a sample of 28 manufacturing industries and discovered the negative relationship between short term debt to total assets, long term debt to total assets and Return on assets (ROA). He also discovered no significant relationship between total debt to equity ratio and ROA.

On the other hand, research conducted by Amanuel (2011) by using 12 manufacturing share companies found in Addis Ababa city, to understand the relevance of theoretical internal (firm level) factors determining capital structure in these share companies. Based on analysis of their audited financial reports it has concluded profitability has no any statistically significant relation with total debt.

### 2.7. Conclusion from Literature Review

The divergence between researchers can be observed in theoretical strand of literature. There are three essential theories which highlight the influence of debt on corporate profitability, namely: trade-off theory, pecking order theory and the agency costs theory. The empirical reviews made reveals that there is disagreement among researchers in determining the effect of debt financing on firm's performance. Some of the studies show that there is positive relationship between different debt ratios and profitability measures. On the other hand, significantly negative relationship has been observed. Finally, the empirical studies show that there is no relationship between debt financing and financial performances of the firm. Several factors may reveal reasons for the contradiction of results in empirical studies. First, these empirical studies focus on different types of sample (countries, sectors, companies and periods). Furthermore, researchers have used different measures of profitability as a dependent variable and various debt ratios as independent variables and finally, these studies applied different methodologies.

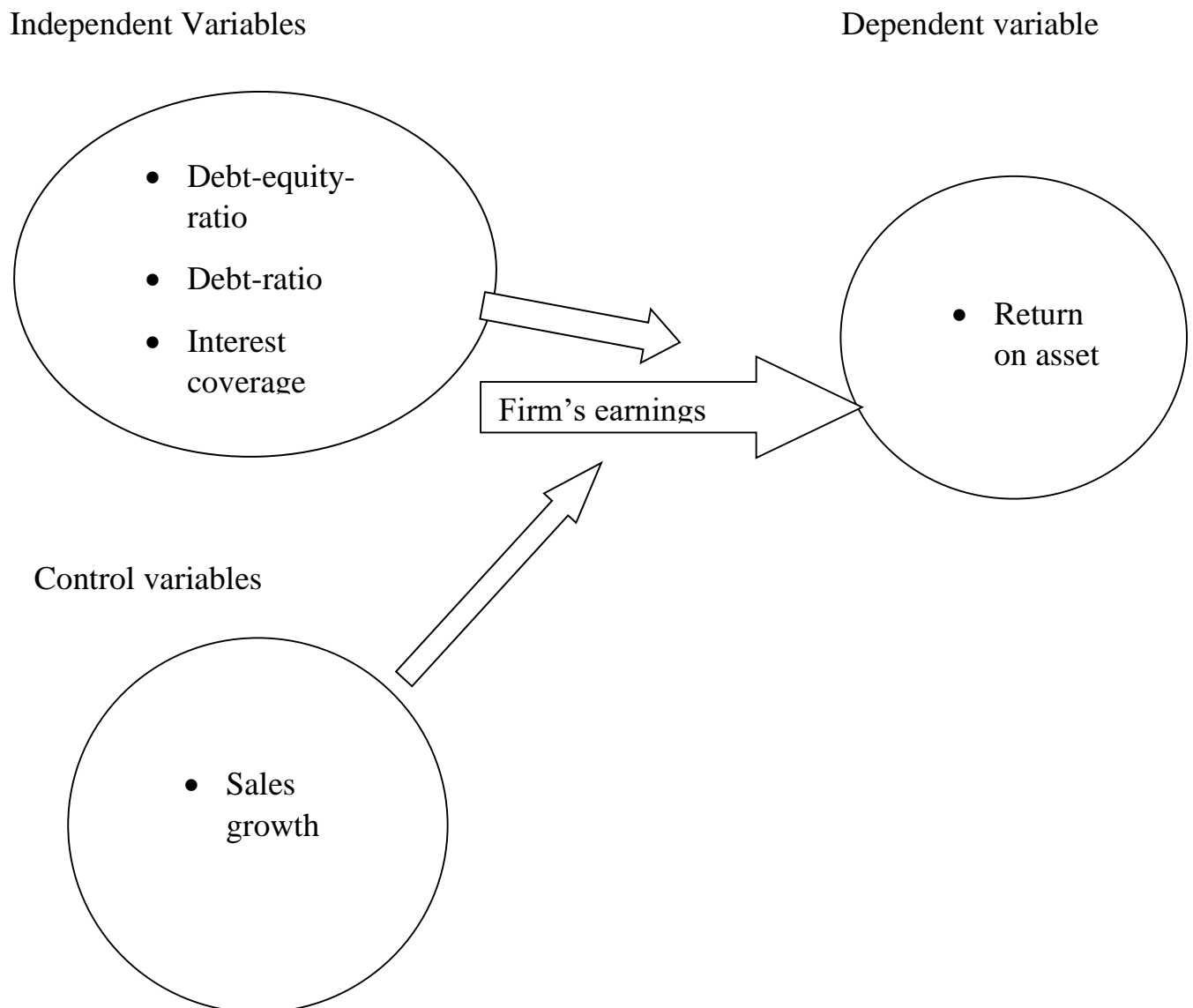
In spite of the continuing theoretical debate on capital structure, there is relatively little empirical evidence on how companies actually select between financing instruments at a given point of time in order to attain optimum profitability. This is mainly due to considerable inter-industry differences caused by unique nature of each industry's business and the intra-firm variations attributed to the business and financial risk of individual firms. Which implies specific empirical research is paramount importance in order to answer the question how the capital structure

influences performance in manufacturing industry in Ethiopia; especially since there are only few previous researches based on scope and methodology.

## 2.8. Conceptual Framework

Based on the theoretical and empirical literature reviewed in the chapter the following conceptual framework has been drawn.

Figure 2.1 Conceptual framework



## Chapter Three

### Research Design and Methodology

#### Introduction

The purpose of this chapter was to present the research design and the underlying research methodology, the choice of the appropriate research method and model specifications for the study.

#### 3.1. Research Design

In this study Quantitative methods approach has been used to meet the overall objective of the study and to answer research questions under it. Thus statistical technique applied was ordinary least square (OLS) regression analysis which had been used to generate a model to analyze the effect of debt financing on firm's earnings. According to Creswell (2003), quantitative research establishes statistically significant conclusions about a population by studying a representative sample of the population.

In order to reach out its very objective the researcher used panel research design employing secondary quantitative data. By combining cross-sectional and time series data, one can increase the number of degrees of freedom, and thus the power of the test, by employing information on the dynamic behavior of a large number of entities at the same time. The additional variation introduced by combining the data in this way can also help to mitigate problems of multi-collinearity that may arise if time series are modeled individually. Third, structuring the model in an appropriate way, we can remove the impact of certain forms of omitted variables bias in regression results (Brooks, 2008).

#### 3.2. Sample size and Techniques

The target population for the study was 28 large manufacturing share companies found in Addis Ababa. According the evidence obtained from Ethiopian revenues and custom authority higher tax payer's office reveals there are about 28 large manufacturing share companies found in Addis Ababa. Considering the time and resource constraints in conducting the survey and based on the objective of the study, convenience and purposive sampling techniques were applied to select 18 large manufacturing firms located in Addis Ababa as a study sample size which represent 65

percent of the total population. Since some companies whose data not available for the entire study period or whose financial years were not uniform and some of the companies have started their operation after the year 2012 G.C. For such a reason it was impossible to increase sample size above mentioned.

According to Brooks (2008) while there is no definitive answer for an appropriate sample size for model specification, it should be noted that most testing procedures in econometrics rely on asymptotic theory. This theory says that as the sample size approaches to the population, the results from the sample estimates are more appropriate for generalizing to the general population. Thus in this case the sample size was large enough to make appropriate generalization to the overall population.

### 3.3. Data Sources and Instruments

The researcher used secondary data. The data for all the variables in the study were extracted from published annual reports (income statement and balance sheet) of selected companies. The five years' data (2012-2016) were covered and the total number of observation could be 90 (ninety).

### 3.4. Data Analysis

The researcher employed mainly panel data method and comprises the cross sectional and time series data for selected manufacturing firms. Data analysis have been done using regression analysis, correlation method and E-view 8 software. The regressed panel data output was analyzed by using descriptive statistics (Mean values, maximum, minimum and standard deviations). Correlation matrix was used to examine the relationship between the dependent variable and explanatory variables. A multiple linear regression model was used to determine the relative importance of each independent variable in influencing profitability. The fixed effect regressions model had been performed and thus ordinary least square (OLS) did conduct to estimate coefficient parameter using e-views 8 econometric software package. Diagnostic tests were performed to ensure whether the assumptions of the Classical Linear Regression Model (CLRM) held or violated in the process of the study.

### 3.5. Measurement of Variables

In this study, the researcher used one dependent variable (return on equity) and independent variables such as: debt to equity ratio, debt to asset ratio and interest coverage ratio. In addition, sales growth was used as a control variable.

#### 3.5.1. Independent Variables

The independent (explanatory) variables the researcher will employ in this study will be, debt to equity ratio debt to asset ratio and interest coverage ratio. These serve as indicators for debt financing.

##### 3.5.1.1. Debt to Equity Ratio

Equity finance is said to be geared or levered up by the use of debt or fixed-return finance. The financial gearing ratio measures the proportion of debt in relation to equity finance in a firm's capital structure.

It is a measure of the proportion of debt to shareholder's funds (i.e. Net worth) in the total financing of a business. Items such as accumulated losses and deferred expenditures are eliminated from the shareholders' funds before using it as denominator. The ratio indicates how much money was raised as debt. It is the ratio which indicating the relative proportion of equity and debt used to finance a company's asset which is an indicator of the financial leverage. It is equal to total debt divided by shareholders' equity. The two components are often taken from the firm's statement of financial position (balance sheet). When used to calculate a company's financial leverage, the debt usually includes only the total debt. This is a useful measure as it helps the investor see the way management has financed operations. It is worth repeating that the gearing ratio is an important indicator of a firm's longer term solvency and a key measure of its financial risk.

The high debt to equity ratio generally means that a company has been aggressive in financing its growth with debt. This can result volatile earning as a result of the additional interest expenses as well as volatile cash flow as principal payments on debt come due. If a lot of debt is used to finance increased operations (high debt to equity), the company could potentially generate more earning per share than it would have without this outside financing. However, as stated increased interest

and the need to repay the principal on borrowed fund can for outweigh the benefit, it is used to measure the net worth of the organization.

The ratio will be computed by dividing a company's total debt by its stockholders' equity and represented in the following way

$$\text{Debt-Equity-Ratio} = \frac{\text{total debt}}{\text{Equity}}$$

### 3.5.1.2. Debt to Asset Ratio

Debt to asset ratio is a ratio that indicates the proportion of a company's debt to its total assets. It shows how much the company depends on debt to finance the firm's asset. The debt to asset ratio gives users a quick measure of the amount of debt that the company has on its balance sheets compared to its assets. The higher the ratio, the greater the risk associated with the firm's operation. A low debt ratio indicates conservative financing with an opportunity to borrow in the future at no significant risk.

The ratio will be computed by dividing a company's total debt by its total assets of the firm and represented in the following way:

$$\text{Debt-Asset- Ratio} = \frac{\text{total debt}}{\text{total asset}}$$

### 3.5.1.3. Interest Coverage Ratio

The interest coverage ratio (ICR) is also related to the gearing ratio as it too gives an indication of longer-term solvency and financial risk by assessing the firm's ability to meet its interest commitments from its profits. It indicates the vulnerability of interest payments to a drop in profits. Interest coverage ratio is equal to earnings before interest and taxes (EBIT) for a time period, often one year, divided by interest expenses for the same time period. The interest coverage ratio is a measure of the number of times a company could make the interest payments on its debt with its EBIT.

$$\text{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest payment for a period}}$$

A higher ratio indicates a better financial health as it means that the company is more capable to meeting its interest obligations from operating earnings. On the other hand, the lower the interest coverage ratio shows the higher the company's debt burden and the greater the possibility of bankruptcy or default.

### 3.5.2. Dependent Variable

The dependent variable use in this study was return on asset, since it was a better measure of firms' earnings by using net income after tax as a numerator and total assets as a denominator.

#### 3.5.2.1. Return on Asset (ROA)

The return on asset (ROA) reflects the ability of a manufacturing firms' management to generate profits from the firm's asset. It shows the profits earned per birr of assets and indicates how effectively firms' assets are managed to generate revenues, although it might be biased due to off-balance sheet activities. Income or financial profitability measures have been frequently used as indicators of firm performance in many studies of strategic evaluation. Rowe and Mason (1987) point out that the use of numerical descriptors in the form of financial ratios is very useful in showing the extent to which firm revenue and profit objectives are achieved.

According to Lawrence (2009) Understanding Return On Asset (ROA) is a measure of the overall effectiveness of management in generating profits with available assets. Ratios Return on Assets is an indicator of the success of the company for the management of wealth (assets) owned by the company, so that by increasing the ratio of Return on Assets reflect the company's performance in managing assets held, so that it can generate profits or earnings.

This is probably the most important single ratio in comparing the efficiency and operating performance of manufacturing firms. ROA is the most comprehensive accounting measure of firm's overall performance Birhanu (2012). Because of this, he majority of studies employed ROA as performance measure, for instance, (Belayneh 2011), (Sufian 2011), (Amdemikael (2012), and Mohanaet al. (2012), syafri (2012). Calculating the return on asset (ROA) by using the following formula:

$$ROA = \frac{\text{net income after tax}}{\text{total asset}}$$

### 3.5.3. Control variable

The researcher used other firm level explanatory control variable to enhance the validity of the model. This includes Sales growth rate (SG).

#### 3.5.3.1 Sales Growth

Sales growth is the difference between two time periods in a business. The time period is in year, month or quarterly. Most business calculates sales growth in a yearly basis. Sales growth shows the increase in sales over specific period of time. Hanson and Mowen (2012) argue sales growth is an increase in sales from year to year or from time to time. Companies that have high sales growth rates will require more investment in the various elements of assets.

It is important because the stakeholders of the company want to know the demand for accompanies product or service will be increasing in the future. Growth rate differ by industry and company size.

$$\text{Sales growth rate (SG)} = \frac{\text{current year sales} - \text{previous year sales}}{\text{previous year sales}}$$

### 3.6 Model Specification

In this section the researcher was discussed the model specification. Firm's earnings have been expressed in return on asset (ROA), and debt equity ratio (DE), debt ratio (DR) and interest coverage ratio (ICR) are used as expressions of leverage indicators.

The study did contain three independent variables to find out the effect of debt financing on firm's earnings.

The model has been specified on an empirical framework using the variables mentioned for this study will investigate the effect of debt financing on firm's earnings. The model has been in the following form according to, (Abor, 2005) and (Muhammad, 2013).

## Effect of Debt Financing On Firms' Earnings

Mathematical expression of the model would be:

$$\text{Earnings} = f(\text{capital structure})$$

$$\text{ROA} = \beta_0 + \beta X_{it} + \varepsilon$$

Where:

ROA = the measure of Firm earnings in dollar amount;

$\beta_0$  = the regression constant (i.e. intercept of equation);

$\beta$  = the change coefficient for  $X_{it}$  variables;

$X_{it}$  = the different independent variables for earnings of the firm  $i$  in time  $t$ .

$\varepsilon$  = the random error term

The general regression equation for the above model will be:

$$\text{ROA} = f(\text{DAR, DER, TIC, , SG,})$$

Where:

ROA = Return on asset;

DER = Debt to Equity ratio;

DAR = Debt Asset ratio;

TIC = Time Interest coverage;

SG = Sales growth rate;

The final equation to be estimated from equation 3 will be:

$$(\text{ROA})_{it} = \beta_0 + \beta_1(\text{DAR})_{it} + \beta_2(\text{DER})_{it} + \beta_3(\text{ICR})_{it} + \beta_4(\text{SG})_{it} + \varepsilon_i$$

*Table 3.1 summary of independent variables*

Variables	Definition	Expected sign
DAR	Debt Asset Ratio	Negative
DER	Debt Equity Ratio	Negative
TIC	Time Interest Coverage	Positive
SG	Sales Growth	Positive

## Chapter four

### Data Interpretation and Analysis

#### Introduction

This chapter in detail focuses on the results of the data analysis and the findings from the study in relation to the research objectives and with the literature reviewed in in literature review section of the study. The analyses are based on the observations of secondary data collected from the sample manufacturing company's annual financial reports. First descriptive statistics of the data survey and the correlation analysis were discussed. In proceed, the assumptions of the classical linear regression model have been diagnosed and the econometric analysis and discussion of the main finding of the study was presented. Finally, the result of the regression analysis was discussed by supporting empirical evidence to conclude the findings of the study.

#### 4.1 Descriptive Statistics

The descriptive statistics was used to describe the features of the data collected from sample manufacturing companies on dependent and independent variables of the study. The dependent variable used in this study was ROA; while the independent variables are debt to asset ratio, debt to equity ratio, interest coverage ratio and in addition sales growth and firm size were used as control variables. The mean, median, maximum, minimum and standard deviations of the variables under the study from 2012 to 2016 have been tried to revealed and discussed, Therefore, the descriptive statistics of the sample firms was presented in table 4.1 below.

*Table 4.1 Descriptive statistics*

	ROA	DAR	DER	TIC	SG
Mean	0.065467	0.572889	1.341920	2.846489	0.064440
Median	0.063500	0.583000	1.398082	2.879000	0.062600
Maximum	0.094000	0.875000	6.874016	5.149000	0.091000
Minimum	0.044000	0.256000	0.344000	1.077000	0.037000
Std. Dev.	0.013458	0.113799	0.887149	0.861200	0.013426

Source: calculated result of Eviews.

The above table 4.1 showed that the mean value of the manufacturing firms returns on asset (ROA) which is measured by net income after tax divided by total assets is 6.5 percent. The result of ROA indicates the efficiency of the management of a company in generating net income from all the total asset of the firms. The higher ROA shows that the company is more efficient in using its resources and reflects the ability of a firm's management to generate profits from mobilizing assets. In addition, it shows the profits earned per Birr of assets and indicates how effectively the firm's assets are managed to generate revenue and to maximize earnings. The maximum value of ROA was 0.0940 and minimum value of 0.0440. This reveals that most profitable manufacturing firms among the sample firms earned 9.4 percent in the assets of the firm, in other words the firms earned 9.4 cents on every single Birr invested. On the other hand, the least profitable firm of the sample manufacturing firms earned 4.4 percent in mobilizing the assets of the firm. The standard deviation is 0.0135 from the mean value, which reflects the presence of variation in earned profit among across the sampled manufacturing firms.

Regarding the independent variables, the debt to asset ratio is one of the independent variable, which is measured by the total debt divide by total asset, has a mean of 0.57. This mean value shows that during the study period the sample manufacturing firms finance their total assets by using 57 percent of debt. In addition, the maximum value was 87.5percent and the minimum values was 25.6 percent with standard deviation of 0.114. This indicates that in the study period the

sample manufacturing firms have variation in using debt and equity on their total assets or finance their operation.

As it is observed from table 4.1 above, the other independent variable used in the study was the debt to equity ratio, which is measured by total debt divided by total equity, has a mean value of 1.342. This average value shows that during the study period the sample manufacturing firms used 1.342 debt in their equity. It also reveals that on average the manufacturing firm in Ethiopia use debt financing in their operation. The maximum and the minimum value are 6.874000 and 0.344000, respectively. This shows some of the sample firms used to the maximum of 6.874 debt ratio in comparison to their equity and in other side some firms used to the minimum of 0.344 debt ratio relative to equity with standard deviation of 0.887149. Indicates that in the study period the sample firms have variation in using debt and equity in their capital structure.

As shown on the above table 4.1, the interest coverage ratio was another important independent variable used in the study, which is measured by earnings before interest and taxes (EBIT) for a one-time period, divided by interest expenses for the same time period. The interest coverage ratio has with a mean value of 2.846489. This average value shows that on average the sample manufacturing firms were capable in meeting their interest obligations from operating earnings and also indicates that the manufacturing firms in Ethiopia are having lesser burdens of interest expenses. Taking into consideration the standard deviation of sample firms under study, it is clear that standard deviation of 0.861200, implying that the manufacturing firms were paying the interest payments on its obligation with its EBIT with variation among firms.

As shown in table 4.1 above, the control variables the researcher used in study were sales growth. The sales growth (SG) was used as a ratio of current year period sales value in birr subtracted from the consecutive previous year period and dividing to the previous year period sales in birr value. The average mean value for a sales growth for a sample manufacturing firms in the study period was 0.0644000. This value reveals that firm's sales increased on average by 6.54 percent in study period. The maximum and minimum for sales value were 0.091000 and 0.037000 respectively, with standard deviation of 0.013426. This showed there was a variation in sales value in manufacturing firms during the study period.

### *4.2 Correlation Analysis*

Correlation and regression analyses are mostly used to show the relationship 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. The analysis of the relationship between dependent variable (ROA) and independent variables (DAR, DER, TIC, SG and SZ) is presented in Table 4.2 as follows using the correlation matrix.

Table 4.2 correlation Analysis

	ROA	DAR	DER	TIC	SG
ROA	1				
DAR	0.646352	1			
DER	0.629656	0.614094	1		
TIC	0.660050	0.492931	0.433102	1	
SG	0.483781	0.034122	0.391984	0.335011	1

Source: eviews result.

The correlation matrix shown in Table 4.2 reveals that the debt to asset ratio, debt to equity ratio, time interest coverage ratio and sales growth have strong positive relationship with return on assets. All the explanatory variables have strong relationship with return on asset. It had been observed that there was strong positive correlation between debt asset ratio and debt equity ratio and also debt asset ratio and time interest coverage ratio. Whereas the other independent variables were not strongly correlated with one another.

To conclude, the correlation matrix table 4.2 above indicate that a positive correlation exists between dependent variables (ROA) and independent variables (debt to asset ratio, debt to equity ratio,). As a result, the correlation coefficients indicate that improvement has been shown in debt to asset ratio, debt to equity ratio and time interest coverage ratio. This showed debt asset ratio, debt equity ratio and time interest coverage and sales were important for firms' earnings, so it should be effectively managed.

### 4.3. Classical Linear Regression Model Assumption and Diagnostic Test

In this section different tests were run to make the data ready for analysis and to get reliable output from the research. From different tests the five most critical assumptions related to classical linear regression model (CLRM) are the most critical on econometric analysis. These tests were proposed to check whether the CLRM assumptions, i.e. the OLS assumptions, are fulfilled when the explanatory variables are regressed against the dependent variables. Accordingly, the following sub-section presents tests of CLRM assumptions.

#### 4.3.1. Test for average value of the error term is zero

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term was included in the regression equation, the average value of the error term in this study is expected to be zero.

#### 4.3.2. Test for heteroscedasticity assumption

The second assumption says that the variance of the errors is constant ( $\text{Var}(u_t) = \sigma^2$ ). This is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedasticity (Brooks, 2008, p 132). To test this assumption, the researcher was employed the white test to check either heteroscedasticity problem presents or not. As a result, the following table 4.3 presents the white test.

Table 4.3 Heteroscedasticity test white

F-statistic	1.373489	Prob. F(4,85)	0.2500
Obs*R-squared	5.463966	Prob. Chi-Square(4)	0.2429
Scaled explained SS	5.019726	Prob. Chi-Square(4)	0.2853

Table.4.4 .Heteroscedasticity test Breusch-pagan-Godfrey

F-statistic	1.233037	Prob. F(4,85)	0.3030
Obs*R-squared	4.935870	Prob. Chi-Square(4)	0.2939
Scaled explained SS	4.534566	Prob. Chi-Square(4)	0.3385

As shown on the above heteroscedasticity test for white and Breusch-Pagan-Godfrey test in the table 4.3, and table 4.4 both the F-statistics and  $X^2$  (m) version of the test statistics showed the same conclusion that there is no evidence for presence of heteroscedasticity since the p-values are considerably more than 0.05. In addition to this the scaled explained SS which is based on the normalized version of the explained sum of squares from the auxiliary regression was also not significant even at 10 percent. This suggests that there is no evidence of heteroscedasticity.

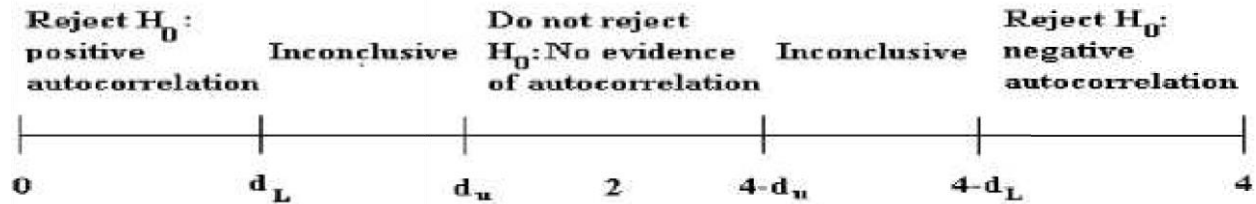
### 4.3.3 Test for autocorrelation assumption

According to Brooks (2008), the covariance between the error terms over time (or cross sectional, for that type of data) is zero. That means, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are auto correlated or they are serially correlated.

To test the presence of autocorrelation, the Durbin-Watson test is used. As noted in Brooks (2008), Durbin Watson is a test for first order autocorrelation (it is a test for a relationship between an error and its immediate previous value). The null hypothesis for the DW test is no autocorrelation between the error term and its lag. According to Brooks (2008), DW has two critical values: an upper critical value ( $d_U$ ) and a lower critical value ( $d_L$ ), and there is also an intermediate region

where the null hypothesis of no autocorrelation cannot be rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure4.1bellow.

Figure4.1 region and non-rejection rejoins to test DW.



The study used the dL and dU values for 90 observations. As per the Durbin-Watson test (DW) table for 90 observations with 4 explanatory variables at 1% level of significance, the dL and dU Values are 1.43 and 1.61, respectively; the value for DW statistic was 2.204734. The relevant critical values for the test are  $d_L=1.43$ ,  $d_U = 1.61$ , and  $4 - d_U = 4 - 1.61 = 2.39$ ;  $4 - d_L = 4 - 1.43 = 2.57$ . Accordingly, Durbin Watson test value of the regression was clearly between 1.61 and 2.39 which reveals that DW value lays on no evidence of autocorrelation region the non-rejection region, where as the null hypothesis do not reject. In this study the Durbin Watson test 2.094227, this showed the absence of auto-correlation problem in the model.

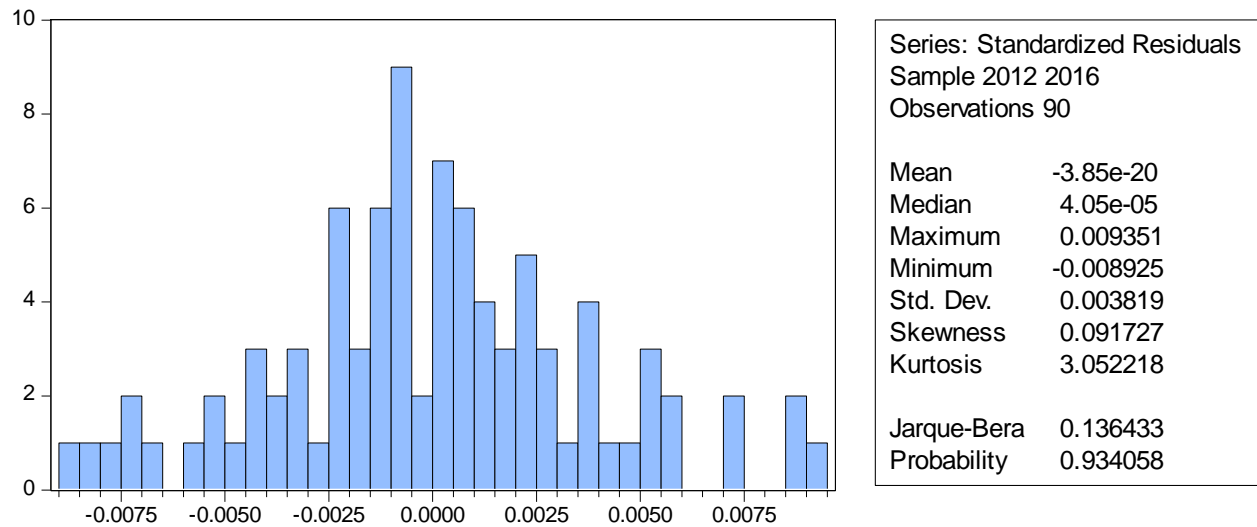
#### 4.3.4 Test for normality assumption

The most fundamental assumption in data analysis is normality, which considers the benchmark for statistical methods. Normality refers to the shape of data distribution for an individual metric Variable. Normality is tested using graphical and statistical tests. The simplest test for normality is a visual check of the histogram that compares the observed data values with distribution approximating the distribution. This method is another important diagnostic test conducted in this study (i.e. the normally distributed errors). Brooks (2008) stated that the normality assumption is required in order to conduct single or joint hypothesis tests about the model parameters. One of the most commonly applied tests for normality is the Bera-Jarque (BJ) test. Bera-Jarque uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments the mean and the variance (Brooks, 2008, p.161). In case of this study, the researcher used Bera-Jarque test to check normality assumptions.

As shown in the histogram in the graph 4.1 below kurtosis was 3.052218 and the Bera-Jarque statistic p-value = 0.934058 which was not significant even at 10% significance level. Hence, the

null hypothesis that is the error term is normally distributed should not be rejected and it seems that the error term in all of the cases follows the normal distribution. So, the residuals are normally distributed in this study, concluded that there is no the problem of normality on models.

Graph 4.1 graphical Representation of normality test.



Source: eviews output.

#### 4.3.5 Test for Multi-co linearity

Multi-co linearity means that there is linear relationship between independent variables which may cause the regression model biased (Gujarati, 2003, pp. 342). In order to examine the possible degree of multi-co linearity among the explanatory variables, and to test the independence of the explanatory variables or to detect any multi-co linearity problem in regression model the study used a correlation matrix of independent variables.

*Table 4.5 Correlation matrix*

	DAR	DER	TIC	SG
DAR	1.000000			
DER	0.614094	1.000000		
TIC	0.492931	0.433102	1.000000	
SG	0.034122	0.391984	0.335011	1.000000

Source: calculation result from eviews.

As shown in table 4.5 above the dependent variables of the study (debt asset ratio, debt equity ratio, time interest coverage and sales growth) are correlated among in one another weakly except debt asset ratio with debt equity ratio correlated by 0.624086. As cited by Mohammed G. (2014) and noted by Gujarati, (2003), Hair et al. (2006) and Pallant (2005) inter-correlation among independent variables is above from 0.9, it causes serious multi-co linearity problem but correlation coefficient below 0.9 not cause serious multi-co linearity problem. As concluding the analysis of correlation power, all independent variables have low correlation power. And this implies no multi-co linearity problem among explanatory variables.

#### 4.4 Choosing Random Effect Verses Fixed Effect Model

According to Dougherty 2011, Brooks (2008) stated that if the observations are based on a random sample then both random effect model and fixed effect model are applicable to it. To check that which of these models should be used, Housman's specification test is applied. But the sample is not selected randomly, therefore, fixed effect model is more appropriate. Hence, based on the sample selection techniques the researcher had been used fixed effect regression method.

A major weakness of Correlations is that it doesn't allow identifying causes from Consequences. To overcome this shortcoming, the researcher has been used the regression analysis to investigate the effect of capital structure components on dependent variables: Return on Asset (ROA). The results are presented in appendix 2.3.

## Effect of Debt Financing On Firms' Earnings

As shown in chapter three, the model used to find out and explain the association between the dependent variable and the independent variables were:

$$(\text{ROA})_{it} = \beta_0 + \beta_1(\text{DER})_{it} + \beta_2(\text{DAR})_{it} + \beta_3(\text{TIC})_{it} + \beta_4(\text{SG})_{it} + \varepsilon_{it}$$

Where:

ROA=Return on asset;

DER = Debt Equity ratio;

DAR = Debt ratio;

TIC = Time Interest coverage;

SG = Sales growth rate;

Under the following fixed effect regression output the beta coefficient for debt equity ratio (DER) time interest coverage ratio (TIC) and sales growth are positive while for the debt asset ratio (DAR) are negative. Beta coefficient indicates the level of influence of independent variables. P-value indicates at what percentage or precession level of each variable is significant. R<sup>2</sup> values indicate the explanatory power of the independent variables over dependent variable. Therefore, the next part discusses the output of fixed effect model in detail.

The following table 4.8 below fixed effect panel data regression model was implemented to identify the relationship between the dependent variable and the independent variable

Table 4.6 Result of the fixed effect regression analysis

Variables	Coefficient	Std. Error	t-statistics	Prob.
C	0.003872	0.005608	0.690539	0.4924
DAR	0.0679768	0.014845	4.578640	0.0000*
DER	0.000227	0.001386	0.164028	0.8702
TIC	0.006270	0.001538	4.075852	0.0001*
SG	0.072920	0.068317	1.067377	0.2898
R-squared				0.908778
Adjusted R-squared				0.873144
S.E. of regression				0.004757
Sum squared residual				0.001448
Log likelihood				368,9654
Durbin-Watson stat				2.204734
F-statistic				25.50332
Prob. (F-statistic)				0.000000

Source: Computed from Eviews result.

\*Statistically significant at 1%.

The  $R^2$  is the indicator of coefficient determination, also known as the goodness of fits statistics that describes how well the model fits a set of observation, was employed to measure the degree of relationship existing among the variables. In addition, the  $R^2$  value is giving details about the independent variables that were used in this study explained in what degree of the dependent

variables. The fixed effect regression result shown in the table 4.6, the  $R^2$  and adjusted R-square were 0.908778 and 0.873144 respectively. These values indicate that the independent variables that had been used in this study did explain 91 percent of the variation in dependent variable. The remaining 9 percent was influenced by other factors that are not covered by this study. This means that other factors not studied in this research affect 9 percent of the manufacturing firms' earnings, which is giving room for further research to investigate the other factors that affect the profitability of manufacturing firms in Ethiopia. Hence, this area indicates that further research is needed to investigate the effect of debt finance on firms' earnings as well as to make improvement in capital structure decision making.

The above table 4.6 presents debt to asset ratio, debt to equity ratio, time interest coverage ratio and firm size affect earnings of the manufacturing firms in Ethiopia even though their level of significance differ. All the dependent variables (debt to asset ratio debt to equity ratio, interest coverage ratio and sales growth) had a positive sign with return on asset. Debt asset ratio and time interest coverage ratio were statistically significant at 1% significance level. While deb equity ratio and sales growth which was used as a control variable had statistically insignificant even at 10% significance level. It had been observed that debt asset ratio and time interest coverage ratio had a positive significant effect on earnings of manufacturing firms in Ethiopia. Whereas debt equity ratio and sales growth had a positive and statistically insignificant effect on manufacturing firms. The regression results were against in sign with researcher hypothesis on debt to asset ratio, debt to equity ratio while the same with time interest coverage ratio and sales growth. The researcher observed that the debt to asset ratio and time interest coverage ratio affect the profitability of the manufacturing firms in Ethiopia significantly. While debt to equity ratio and sales growth insignificantly affect the profitability of the manufacturing firms in Ethiopia. The coefficient of determination was 91 percent, then it can be concluded that the ability of the explanatory variables in explaining the dependent variable was high enough. Additionally, the results were in consistent with the theoretical literature shown due to tax advantage using debt in capital structure has contribution to firm profit.

## 4.6 Discussion of the Regression Results

In this section the researcher discussed the general result of each explanatory variables based on fixed effect regression results indicated in the table 4.6 above. Each variable was presented by supporting the result with theories and previous empirical studies made in this area.

### 4.6.1 Debt to Asset Ratio

The results of fixed effect regression model in table 4.6 revealed that debt to total asset ratio had a positive relationship with earnings, and statistically significant at 1 percent significant level. The result was not in accordance with the expected sign. This implies that keeping the other things constant, every one percent change in manufacturing firms' debt to asset ratio has a resultant change of 7 percent on the profitability. This result also shows that, as the level of external financing in Ethiopian manufacturing industry increase the level of profit also increase. The output of the study revealed a positive relationship between debt to asset ratio and manufacturing firms' earnings based on tax considerations. The findings were consistent with the trade-off theory. In addition, similar findings were observed in the following empirical studies, such as the empirical studies under taken by (Bourke 1989), (Berger and Bonaccorsi 2006), (Margrath and psillaki 2007), (Kebewar 2012) and (Khalid et al 2013) were confirmed that there had been a positive relationship between debt to asset ratio and profitability. The researcher had observed that due to the tax advantage and relatively low borrowing cost debt financing had a positive effect on earnings of the manufacturing firms' in Ethiopia. The profitable firms may get competitive advantage and as a result can compete in the existing market very well and to grow and diversify easily.

### 4.6.2 Debt to Equity Ratio

The results of fixed effect model in table 4.6 indicated that debt to total equity ratio had a positive relationship with profitability but statistically insignificant even at 10 percent significant level. However, the regression result was not in similar with sign expected by researcher hypothesis of the study. Debt to equity ratio was statistically insignificant means debt equity ratio had no effect on profitability of the manufacturing firms in Ethiopia during the study period. This also suggests that the null hypothesis has not rejected. The result was consistent with the study of Eunju and Soocheong (2005) and (Kim et. al, 2014) found positive and insignificant relationship of return on asset and debt to equity ratio.

### 4.6.3. Time Interest Coverage Ratio

The results of fixed effect model in table 4.6 shows that the relationship between interest coverage ratio and earnings was positive and statistically significant at 1 percent significance level. The regression results showed that other dependent variables kept constant every 1 percent increment in time interest coverage ratio would increase return on asset by 0.6 percent. The results of the regression model were in accordance with the sign of the hypothesis did set by the researcher.

The interest coverage ratio is computed by dividing earnings before interest and taxes (EBIT) by interest charges. (Pandey, 2010), explains interest coverage ratio or the times interest earned is used to test the firms' debt servicing capacity. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of the interest charges. A higher ratio is desirable, but too high a ratio indicates that the firm is very conservative in using debt and that it is not using credit to the best advantage of shareholders.

This significant positive relationship between interest coverage ratio and profitability constant with various previous research findings like, Empirical researches under taken by (Khalid et al 2013), (Enugu and Amorji 2014) and (Enekwe, et al 2014) and the like had been confirmed that there were a positive and significant relationship between time interest coverage ratio and firms' earnings.

### 4.6.4 Sales Growth

The results of the fixed effect regression model in table 4.6 above showed that there was a positive but statistically insignificant relationship between sales growth and firms' earnings which was expressed by return on asset. The statistically insignificant relationship of return on asset and sales growth reveals that sales growth has no effect on earnings of manufacturing firms in Ethiopia during the study period. The result was similar with the researcher expected sign of hypothesis. The finding was similar with Mohd and Yasuo (2013) and Ratana (2017) found that sales growth has positive and insignificant effect on profitability of the firms.

*Table 4.7 Summary of expected and actual dependent variables*

Dependent variables	Expected Effect on ROA	Actual Effect on ROA
DAR	Negative and Significant	Positive and significant
DER	Negative and significant	Positive and insignificant
TIC	Positive and significant	Positive and significant
SG	Positive and significant	Positive and insignificant

## Chapter Five

### Conclusion and Recommendations

#### 5.1 Conclusion

Business firms need finance sources to undertake their business operation aiming to maximize the profit. The finance sources could be either internal or external. It is the managerial decision how and when to use different types of finance sources. Firms employ debt financing due to various reasons. The purpose of this thesis was to examine the effect of debt financing on manufacturing firms in Ethiopia, by taking evidence from manufacturing firms in Addis Ababa. The researcher had been tried to review the theoretical and empirical literatures in the area.

Therefore, based on the discussion and findings made in the previous chapters the following conclusions have been drawn.

- The descriptive statistics showed the sample manufacturing firms in average used 57 % debt to finance their assets.
- The debt to asset ratio (DAR), debt to equity ratio (DER), time interest coverage ratio (TIC) and sales growth (SG) have positively correlated with firms' earnings which has been measured using return on asset (ROA).
- Debt to asset ratio (DAR), debt to equity ratio, (DER), time interest coverage ratio (TIC) and sales growth (SG) have a positive relationship with manufacturing firms' earnings.
- The goodness of fit statistics ( $R^2$ ) of the fixed effect regression was 0.91. This indicates that 91 percent of the dependent variable had been explained by explanatory variables, while 9 percent of the variation factors were not explained by explanatory variables. This means the 9 percent of the variations were affected by other factors outside the model. It had been observed that independent variables were the major determinant factors of the earnings of the manufacturing firms in Ethiopia.

- That debt to asset ratio (DAR), and time interest coverage ratio (TIC) bear a positive relationship with the return on assets (ROA) and statistically significance at 1% significance level and important factors for earnings of manufacturing firms in Ethiopia.
- Debt equity ratio (DER) and Sales growth (SG) have a positive relationship with return on asset (ROA) but statistically insignificant, it has been observed that debt equity ratio and sales growth have no effect on profitability of manufacturing firms in Ethiopia during study period.

### 5.2 Recommendations

In light of the major finding obtained from the results, which are confirmed by this study and discussed in detail in previous chapters, the following recommendations have been forwarded.

1. Manufacturing firms in Ethiopia are the emerging and highly growing industries and operate in high competition to be profitable and stay in the market. Therefore, manufacturing firms should use debt in their capital structure due to the tax advantage of debt in order to increase the profitability of firms.
2. It is important that manufacturing firms look for long term debt potentials. Even where internal financing would be used, these firms should search for low interest bearing loans as a result to get ride off the risk of financial distress.

### 5.3. Areas for Further Research

The purpose of this section was to serve as a source of information for further researchers who want to write research papers within this area. Specify the following recommendations for further researches.

1. The study has put some ground work to explore the effect of debt financing on profitability of manufacturing firms in Ethiopian by using debt to asset ratio, debt to equity ratio and interest coverage ratio. Further work is required to develop new hypotheses and design new variables by using other debt ratio measurements, like; short term debt and long term debt to asset ratio, capitalization ratio, equity multiplier and cash flow to debt ratio, to reflect the effect of debt financing on manufacturing firms related with theory of capital structure.

2. The other important issue which was not found exactly by this study was the question of availability of capitals to manufacturing industry in which they have the freedom to choose financing options to adjust their capital structure and how manufacturing firms increase their financing alternatives to maximize their profits.

#### 5.4 challenges

At the time certain studies undergo it's obvious that the researcher could face various challenges. Specifically, in our country there is a problem regarding obtaining enough information as researcher demands. I as a researcher also faced challenges in collecting data since some of the business companies not used to willing to deliver financial data. To solve the problem related with data necessary efforts should be made both by government and the community at large.

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Appendix 1- Sample Manufacturing Companies

No	Name of manufacturing firms	Adress	Telephone
1	A.A Tannery SC.	Kolfekeranio	0911 201451
2	Akaki Spare parts and hand tools SC.	Akaka kality	0114 340422
3	A.A bootle and Glass SC.	Kolbe keranio	0112702628
4	Awash wine SC	Lideta	0113717050
5	Ethiopian Pulp & Paper S.C	Kirkos	0115510786
6	Ethiopian Pharmaceuticals Mfg. S.C	Bole	0113712605
7	BM Ethiopia garment and textile S.C	Akakikality	0114423455
8	kaliy food SC.	Akakikality	0114390144
9	kality Metal Industry S.C	Akakikality	0114351692
10	FafafodS.c.	Akakikality	0114421755
11	Anbessa Shoe S.C	Lideta	0112754279
12	Ethiopian leather industry S.c.	Akakikality	
13	East Cement S.C	Yeka Sub-city	0116452100
14	Ethiopian crown cork and can manuf.	Akakikality	0114390244
15	ECAFCO S.C	Nifa Silk	0114421233
16	Repi soap and detergent S.c.	Kolfekeraniyo	
17	AKaki metal SC.	Akakikality	0114342323
18	Moha soft drink SC.	Lideta	0116614655

Appendix 2.1 Heteroscedasticity test white.

Heteroskedasticity Test: White

F-statistic	1.373489	Prob. F(4,85)	0.2500
Obs*R-squared	5.463966	Prob. Chi-Square(4)	0.2429
Scaled explained SS	5.019726	Prob. Chi-Square(4)	0.2853

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 02/27/19 Time: 01:03

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.33E-06	2.65E-05	0.239391	0.8114
DAR^2	0.000165	8.10E-05	2.037546	0.0447
DER^2	-2.48E-06	1.96E-06	-1.267523	0.2084
TIC^2	9.25E-07	2.09E-06	0.442406	0.6593
SG^2	-0.003380	0.004633	-0.729538	0.4677

R-squared	0.060711	Mean dependent var	4.77E-05
Adjusted R-squared	0.016509	S.D. dependent var	6.89E-05
S.E. of regression	6.83E-05	Akaike info criterion	-16.29100
Sum squared resid	3.97E-07	Schwarz criterion	-16.15212
Log likelihood	738.0949	Hannan-Quinn criter.	-16.23499
F-statistic	1.373489	Durbin-Watson stat	1.459977
Prob(F-statistic)	0.249966		

Appendix 2.2 Heteroscedasticity test Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.233037	Prob. F(4,85)	0.3030
Obs*R-squared	4.935870	Prob. Chi-Square(4)	0.2939
Scaled explained SS	4.534566	Prob. Chi-Square(4)	0.3385

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 02/27/19 Time: 01:01

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.37E-05	5.55E-05	-0.426718	0.6707
DAR	0.000174	0.000119	1.456531	0.1489
DER	-1.29E-05	1.63E-05	-0.793256	0.4298
TIC	1.01E-05	1.19E-05	0.845813	0.4000
SG	-0.000557	0.000638	-0.873269	0.3850
R-squared	0.054843	Mean dependent var	4.77E-05	
Adjusted R-squared	0.010365	S.D. dependent var	6.89E-05	
S.E. of regression	6.85E-05	Akaike info criterion	-16.28477	
Sum squared resid	3.99E-07	Schwarz criterion	-16.14589	
Log likelihood	737.8146	Hannan-Quinn criter.	-16.22877	
F-statistic	1.233037	Durbin-Watson stat	1.490137	
Prob(F-statistic)	0.303019			

Appendix 2.3 Fixed effect Regression output

Dependent Variable: ROA  
 Method: Panel Least Squares  
 Date: 03/02/19 Time: 06:44  
 Sample: 2012 2016  
 Periods included: 5  
 Cross-sections included: 18  
 Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003872	0.005608	0.690539	0.4924
DAR	0.067968	0.014845	4.578640	0.0000
DER	0.000227	0.001386	0.164028	0.8702
TIC	0.006270	0.001538	4.075862	0.0001
SG	0.072920	0.068317	1.067377	0.2898

Effects Specification

Cross-section fixed (dummy variables)  
 Period fixed (dummy variables)

R-squared	0.908778	Mean dependent var	0.065878
Adjusted R-squared	0.873144	S.D. dependent var	0.013357
S.E. of regression	0.004757	Akaike info criterion	-7.621453
Sum squared resid	0.001448	Schwarz criterion	-6.899286
Log likelihood	368.9654	Hannan-Quinn criter.	-7.330233
F-statistic	25.50332	Durbin-Watson stat	2.204734
Prob(F-statistic)	0.000000		