

**THE IMPACTS OF CAPITAL STRUCTURE ON THE  
FINANCIAL PERFORMANCE OF MICRO FINANCE  
INSTITUTION IN ETHIOPIA**

A Senior Essay Paper Submitted to Department of Accounting and Finance for  
Partial Fulfillment of the Requirements of Bachelor of Arts (BA) Degree in  
Accounting and Finance

**BY: AMANUEL MELKIE**

**ADVISOR: Mrs. Sitina Akmel (Asst. Prof.)**



**COLLEGE OF BUSSINES AND ECONOMICS**

**DEPARTMENT OF ACCOUNTING AND FINANCE**

**JANUARY, 2021**

**WOLKITE, ETHIOPIA**

## *Abstract*

*This study was undertaken with the objective of identifying the impact of capital structure on microfinance institutions financial performance (profitability) in Ethiopia and thus achieving the optimum level of profitability is crucial. The study was based on twenty microfinance institutions, within the period of 2010 to 2018. MFIs specific and different variables were analyzed by using the balanced panel random effect regression model. MFIs profitability is measured in one ratio: return on asset ratio. The finding of the study revealed that, TDTAR has negative and stastically significant impact on profitability; while others have positive and stastically significant impact on profitability of Ethiopian microfinance institutions.*

***Key words:*** *Microfinance, Debt Financing, profitability, return on asset ratio, Balanced panel Random Effect Regression Model*

## Acknowledgment

First and for most, I would like to thank the almighty of GOD for all his assistance to accomplish my project.

My sincere and deepest gratitude goes to my Advisor Mrs. Sitina Akmel (Asst. Prof.), for her constructive comments, valuable suggestions and good guidance. I equally thank her for her kindness and necessary encouragement. I also want to give special thanks to my friend Alemayehu Getachew, for his material and moral assistance.

My deepest gratitude goes to mother, father, sisters, brothers (my backbone) who have in one way or another assist me morally and economically to accomplish this work. At last, but not the least, my great thanks go to all my friends and classmates those who provided me all the necessary assistance when doing my research.

## Contents

<i>Abstract</i> .....	i
Acknowledgment.....	ii
<b>Contents</b> .....	iii
<b>List of Table</b> .....	<b>Error! Bookmark not defined.</b>
<b>List of acronyms</b> .....	vii
<b>CHAPTER ONE</b> .....	1
1.1. Background of the study.....	1
1.2. Statement of the problem.....	2
1.3. Objectives.....	4
1.3.1. General Objective.....	4
1.3.2. Specific Objectives.....	4
1.4. Research Hypothesis.....	4
1.5. Significance of the Study.....	5
1.6. Scope and limitation of the study.....	5
1.7. Organization of the proposal.....	6
<b>CHAPTER TWO</b> .....	7
<b>Review Literatures</b> .....	7
2.1. Capital structures theories.....	7
2.1.1. Modigliani and Miller (MM) theory.....	8
2.1.2. Trade-off theory.....	8
2.1.3. Pecking order theory.....	10
2.2. Overview of Microfinance Institutions role.....	12
2.3. Capital Structure of Microfinance.....	13
2.3.1. Equity Financing.....	14
2.3.2. Liabilities Financing.....	15
2.3.4. Borrowings and other Liabilities.....	17
2.4. Firm Financial Performance (Profitability).....	18
2.4.1. Profitability Measures.....	18
2.5. The Link between capital structure and Financial Performance.....	20
2.6. EMPIRICAL REVIEW.....	21
2.7 Knowledge Gap.....	24
<b>CHAPTER THREE</b> .....	26

<b>Research Design and methodology</b> .....	26
3.1. Introduction .....	26
3.2. Description of the study area .....	26
3.3 Research design .....	26
3.3. Research Approach.....	26
3.4. Source and method of data collection.....	27
3.5. The target population and Sampling frame.....	28
3.6. Data Analysis Method .....	28
3.7. Model Specification and Variable Presentation.....	28
3.7.1. Variable Presentation.....	28
3.7.2. Model Specification.....	32
<b>CHAPTER FOUR</b> .....	35
<b>Data Analysis and Presentation</b> .....	35
<b>4. Introduction</b> .....	35
4.1. Descriptive Statistics .....	35
4.2. Correlation Analysis .....	38
4.3. Classical Linear Regression Model Assumptions and Diagnostic Test.....	39
4.3.1. Autocorrelation assumption.....	39
4.3.2. Normality.....	40
4.3.3. Multicollinearity .....	42
4.4. Model Selection; Fixed Effect versus Random Effect Models.....	43
4.5. Regression Analysis Results.....	44
4.6. Discussion on Regression Results .....	46
4.6.1. Total Debt to Asset Ratio .....	46
4.6.2. Total Debt to Equity ratio.....	47
4.6.3. Interest Coverage Ratio .....	47
4.6.4. Long term debt to asset ratio .....	48
<b>CHAPTER FIVE</b> .....	50
<b>Conclusion and Recommendations</b> .....	50
5.1. Conclusion.....	50
5.2. Recommendations.....	51
<b>REFERENCE</b> .....	53
<b>Appendix</b> .....	56
Appendix I- Excel Result.....	56

Appendix II- Regression Result..... 61  
Appendix III- Hausman test result..... 62

<b>LIST OF TABLE</b>	<b>PAGE NO</b>
Table 4.1 Descriptive Statistics of Dependent and Independent Variables	36
Table 4.2 Correlation Matrix for Dependent and Independent Variables	38
Table 4.3 DW test result test of autocorrelation	40
Table 4.4 Correlation Matrix between Explanatory Variables	43
Table 4.5 Hausman test	44
Table 4.6 Results of the fixed effect panel data regression analysis	45
Table 4.7 The Summary of expected and actual signs of explanatory variables	49

## **List of acronyms**

F<sub>SIZE</sub>: asset size

I<sub>CR</sub>: interest coverage ratio

L<sub>TDTAR</sub>: long term debt to total asset ratio

M<sub>FIS</sub>: microfinance institution

R<sub>OA</sub>: return on asset

T<sub>DTAR</sub>: total debt to total asset ratio

T<sub>DTER</sub>: total debt to total equity ratio

## CHAPTER ONE

### 1.1. Background of the study

For every organization in one way or another, their business activities must be financed. A good financing strategy is one of the main factors for their success. As a result, the proportion of debt and equity which make up assets of a firm is one of the major issues for their financial earnings that owners and managers are worry about it, in order to make an optimal capital structure decision which maximizes value of the firm.

The capital structure is the particular combination of debt and equity used by a company to finance its overall operations and growth. Debt comes in the form of bond issues or loans, while equity may come in the form of common stock, preferred stock, or retained earnings. Short-term debt such as working capital requirements is also considered to be part of the capital structure. Capital Structure Understanding Capital Structure Both debt and equity can be found on the balance sheet (Alicia tuovila, 2019). The concept is generally described as the combination of debt and equity that makes the total capital of firms (Saad, 2010). The proportion of debt to equity is a strategic choice of corporate managers. Capital structure decision is the vital one since the financial performance of an enterprise is directly affected by such decision. Hence, proper care and attention need to be given while determining capital structure decision. In the statement of affairs of a firm, the overall position of the enterprise regarding all kinds of assets and liabilities are shown. Capital is a vital part of that statement (Saad, 2010).

Consequently, it is being increasingly realized that a company should plan its capital structure to maximize the use of funds and to be able to adapt more easily to the changing conditions (Pandey, 2009).

Capital structure of any institution should therefore be well managed to ensure that the firm remains in operation and it's able to finance its projects. Therefore, the way a microfinance institution combines its debt and equity, will define its performance as noted by (Ross et al., 2009).

In Ethiopia there are studies on determinants of capital structure and the impact of capital structure in banking and other non-financial sectors, the existing empirical studies have basically

focused on the determinants of capital structure, to explain how firms can finance business activities by using debts and equity to maximize the benefits for shareholders based on their advantages.

Hence, the aim of this study is to examine the impact of capital structure on the financial performance of microfinance institutions in Ethiopia. This will equip financial managers with applied knowledge of the potential problems in performance and capital structure, as well as determining their optimal level of capital structure to achieve optimum level of firm's financial performance (profitability) and hence shareholders' wealth.

## **1.2. Statement of the problem**

The issue to decide on financing a business operation and investment is the utmost consideration given from the time of its initial establishment to the entire life of the business. In raising the fund for use, managers (owners) encounter different sources to choose. A source can be a fund raised from owners of the business (or stockholders) as equity capital and debt through issuance of debt securities or borrowing loan extended through financial institutions. Financing decision is also vital in relation with the profitability of an enterprise as well as the performance is directly affected by such decision.

The successful selection and use of fund are one of the key elements of the firms' financial strategy. Hence, proper care and attention need to be given for determining financial decision. Moreover, financing decision is among the major issues in both small and large business firms. Most of the business firm's especially small ones are said to die or poorly perform due to different challenges facing managers or owners on the financing decisions. 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. Many studies have been conducted by using different methods and data from developed and developing countries to define the impact of capital structure on financial performance of firms. They investigate the link between the choice of leverage ratios, firm size, and other factors (such as non-debt tax shields, firm growth and collateral values of assets etc.). However, the results of their studies provide contradictory and mixed that consists negative, positive and mixed correlation between financial performance (profitability) and the leverage ratio of firms in developed and developing countries.

Hutchison and Cox (2006), test the causal relationship between bank capital structure and profitability by using bank data from the US in two different time periods: the less regulated period from 1983 to 1989 and the more highly regulated period from 1996 to 2002. Financial leverage is found to be positively related to the return on equity (ROE) or the return on assets (ROA). K yereboah Coleman (2007) examines the impact of financial structure on the performance of MFIs. This study shows that most MFIs employ high leverage and finance their operations with long-term rather than short-term debt. Highly leveraged MFIs also perform and found better financial return by reaching out to more clients, and enjoy scale economies.

In contrast to the above results, (Rao et al.2007) reached that showed negative (inversely) relationship of firm debt and profitability. Chakra borty, (2010) reported a negative relationship between debt and financial performance of firms. While examining the relationship between leverage and financial performance of firms in Jordan, Zeitun, Tian (2007) found that debt level is negatively related with performance.

In addition to the above contradictory researched results, the relationship between firm's financial performance and capital structure has produced mixed results. (Arbian and Safari, 2009), investigate the effects of capital structure on profitability using 100 Iranian listed firms from 2001 to 2007. They found short-term and total debts are positively related to profitability measured by (ROE), which also indicate a negative relation between long-term debts and ROE. Based on the indication of the above, still there are contradictory results of capital structure and firm's financial performance relationship. Therefore, one of the aim of this research is to identify the relationship between capital structure measured by total debt to asset ratio (TDTAR), total debt to equity ratio (TDTER) and long term debt to asset ratio (LTDTAR), interest coverage ratio(ICR) and financial performance measured by return on asset (ROA) of Ethiopian microfinance industry over the period 2010-2018 years.

In Ethiopia conceivably as to the researcher's knowledge, there are few researches conducted where most of them are emphasized in determinants of capital structure. Weldemikal (2012) examined determinants of capital structure on commercial banks in Ethiopian banking industry, Mohammed ( 2014) investigate determinant factors of capitals structure and their impact on performance evidence from insurance companies in Ethiopia, Frezewed (2016) investigate corporate capital structure and its impact on profitability, evidenced from manufacturing firms in

Ethiopia, Tamirat (2015) examine the effect of debt financing on profitability of commercial banks in Ethiopia.

Therefore, based on the above studies, there is no empirical research done in Ethiopia concerning the impact of capital structure on financial performance of microfinance institutions (MFIs) in Ethiopia.

### **1.3. Objectives**

#### **1.3.1. General Objective**

The main purpose of this research was to examine the impact of capital structure on financial performance (profitability) of microfinance institutions in Ethiopia.

#### **1.3.2. Specific Objectives**

This study attempted to achieve the following specific objectives:

- To examine the impact of total debt to asset ratio on Return on Asset as a measure of financial performance of microfinance institutions in Ethiopia.
- To determine whether total debt to equity ratio have any impact on Return on Asset as a measure of financial performance of microfinance institutions in Ethiopia.
- To establish if there is any impact of long-term debt to asset ratio on Return on Asset as a measure of financial performance of microfinance institutions in Ethiopia.
- To examine the impact of interest coverage ratio on Return on asset as a measure of financial performance of microfinance institutions in Ethiopia.

### **1.4. Research Hypothesis**

Based on theories and empirical studies develops the following hypothesis to find out the impact of capital structure on financial performance given in the study, the following hypotheses are developed for testing.

**H1:** There is a significant positive relationship between total debt to asset ratio and return on asset (ROA)

**H2:** There is a significant positive relationship between total debt to equity ratio and return on asset (ROA)

**H3:** There is a significant positive relationship between long term debt to asset ratio and return on asset (ROA)

**H4:** There is a significant positive relationship between interest coverage ratio and return on asset (ROA)

### **1.5. Significance of the Study**

This study that deals with the impact of capital structure on financial performance (profitability) of microfinance institutions in Ethiopia is beneficial for different stakeholders such as for microfinance institutions, concerned bodies like donors and other government institutions including the controlling organ National Bank of Ethiopia.

- For MFIs managers, this study provides basic information about the impact of capital structure on financial performance and understanding on the activities that enhance their institutions performance.
- For future researchers, provide basic information for further study in the sector by developing new hypotheses and design with new variables by using other capital structure measurements that are not included in this research.
- Finally, the finding of the study is used as an input for the concerned bodies (regulator and policy makers) to forecast the overall health and soundness of the microfinance business in Ethiopia.

### **1.6. Scope and limitation of the study**

This paper is confined in identifying impact of capital structure on the financial performance of microfinance institution in Ethiopia. Even if there are so many factors that affects MFIs financial performance (profitability), but this study is limits only to factors such as, total debt to asset ratio, total debt to equity ratio and long term debt to asset ratio to measure the level of debt on capital structure of the institution to ensure the accuracy of the results of the regression model. The using of MFIs variables by using balanced panel random effect regression model. There are 35 microfinance institutions in Ethiopia. The study selected 20 microfinance institutions that have nine years (2010-2018) data as well as full data or accessible data. As the MFIs are young in Ethiopia, there is no long period data for all MFIs operating in Ethiopia in

order to randomly determine the sample size. Therefore, the selected twenty (20) microfinance institutions are based on their time and availability of data.

### **1.7. Organization of the proposal**

This research report was organized under five chapters. The first chapter provides the general overview of the study. The second Chapter reviewed the related literatures on the impact of MFIs profitability. The third chapter focuses on the methodology of the study. The fourth chapter was provided result and discussion. The last chapter includes conclusion and recommendations and at the end references and appendixes were attached

## **CHAPTER TWO**

### **Review Literatures**

#### **Introduction**

This chapter serves as background for this study by describing concepts of financial intermediation and factors that could influence MFIs financial performance (profitability). Subsequent chapters will build on concepts and definitions described here. In light of the above, the purpose of this chapter is to review the literatures related to the impact of capital structure on the financial performance (profitability) of MFIs. The review has theoretical orientation, overview of MFIs in Ethiopia and previous studies related to the topics. The chapter begins with theoretical framework on capital structure theories to inform the study further. In addition, the researcher discusses various empirical studies done in the same field. Finally, the chapter summery and knowledge gap are stated.

#### **2.1. Capital structures theories**

The capital structure decision is crucial for any business organization, including MFIs. This decision is important because of the need to maximize the returns of the firm, and also because of the impact such a decision has on the firm's ability to deal with its competitive environment. The capital structure of a firm is a mix of different securities (Abor, 2005). Berk and DeMarzo (2007) define capital structure as "The relative proportions of debt, equity, and other securities that a firm has outstanding constitute its capital structure".

Today MFIs have an increasingly broad range of financial sources to urban traders and rural households at their disposal. This gives them a wider funding diversification, but it also makes it much more complex to make decisions about capital structure. Better capital structure decision making amongst MFIs will minimize risk, maximize financial flexibility, and encourage the long-term solvency needed to provide sustainable financial services to poor clients (CGAP, 2007). Within finance, capital structure has been hotly debated issue for years. Several theories have been advanced in explaining the firm's capital structure. Despite this researchers in financial management have not yet found the optimal capital structure. So far the best that the academics and practitioners have been able to achieve are prescriptions that satisfy short-term goals (Abor, 2005). The following section will discuss the most influential economic theories on

the link between capital structure and financial performance to provide quality statements for the empirical analysis presented in the following chapters.

### **2.1.1. Modigliani and Miller (MM) theory**

Modigliani and Miller, studied capital structure theory intensely in 1958 and from their analysis they developed the capital structure irrelevance proposition. They suggested that the relationship between capital structure and cost of capital is irrelevant. This effectively implies that increase in debt level does not have an impact on cost of capital. They further hypothesized that in perfect markets, it does not matter what capital structure a company uses to finance its operations. They theorized that the market value of a firm is determined by its earning power and the risk of its underlying assets, and that its value is independent of the way it chooses to finance its investment or distribute its dividends. However, they posit that for this proposition to hold there will be no taxes charged, no transaction costs and no bankruptcy costs. They further assumed that there will be equivalence in borrowing costs for both companies and directors. Another key assumption they made is that there will be symmetry in information and that there will be no effect of debt on a company's earnings before interest and taxes.

According to Modigliani and Miller (1963), debts have a tax benefit shield, which leads firms to maximize their value by using as much debt as possible if there are no bankruptcy and agency costs. However, imperfections exist in the real world, including bankruptcy costs, agency costs and gains from leverage-induced tax shields. Thus, financial structure is completely relevant to the value of a firm. It suggests that an optimal financial structure may exist and tends to reflect both the tax advantages of debt, fewer default costs and the agency costs of managerial discretion (Lehan 1998).

There are a number of theoretical and empirical studies that largely support the notion that bankruptcy and agency costs are the partial determinants of leverage and optimal financial structure. These studies have generally examined the financing behaviors of firms if Modigliani and Miller's hypotheses do not hold.

### **2.1.2. Trade-off theory**

It is an extension of the MM theory. It hypothesizes that the firm's optimal capital structure results from the trade off from the influences of firms and personal taxes, agency and bankruptcy

costs. Companies must therefore, choose the level of debt that maximizes the benefits from the tax shield.

It is anchored on the idea that a company chooses how much debt finance and how much equity finance it should use by balancing the costs and the benefits. (Kraus & Litzenberger, 1973) after considering a balance between the dead weight costs of bankruptcy and the tax saving benefits of debt developed a classical version of the hypothesis. This theory states that there is an advantage to financing with debt and there is also a cost of financing with debt, the cost of financial distress and non-bankruptcy cost. The empirical relevance of trade off theory has often been challenged. (Miller,1977), for example compared this balancing as akin to the balance between horse and rabbit content in a stew of one horse and one rabbit.

When firms are profitable, they prefer debts to equity because interest paid to lenders is a deductible item to net income before paying corporate income tax (IFS, 2011). However, one of the disadvantages of debt is the cost of potential financial distress, especially when the firm relies on too much of it. They target their capital structures and tend to use more debt to implement highly efficient output strategies when the past positive return is a good proxy for future return (Jensen, 1986). Firms with low profit prefer internal funds, since external ones may be more expensive and non-debt tax shields may be bigger than the advantage of tax benefits (De Angelo and Masulis 1980). Developed from these predictions, dynamic trade-off theory points out the role of time, expectations and adjustment costs. The correct financing decision typically depends on the financing margin that the firm anticipates in the next period (i.e. some firms expect to pay out funds, while others expect to raise funds in the next period). This suggests that the optimal financial choice today tends to depend on what is expected to be optimal in the next period. These theories explain the difference in the debt-to-equity ratio between industries but they do not explain differences within the same industry.

In addition, Trading-off theory assumes that large firms are more diversified, have lower risk, better reputation, more stable cash flows and fewer hazards to be liquidated. This gives large firms easier access to the capital markets with negligible debt costs. Thus, these firms are stronger to face bankruptcy and financial distress (Mohammed G. 2014).

This theory has been reviewed so as to anchor the independent variable of debt and Deposits. The trade-off theory suggests that managers simply prefer debt (Myers, 2001). They balance the costs and benefits of debt to reach an optimal leverage level, the interest expense on the debt is tax deductible (thereby reducing the firm's tax liability), thereby reducing the effective price of using debt relative to equity (Myers, 2001). An additional benefit of debt is that an organization's free cash flow is reduced (Myers, 2001). Deposit finance has also played a role in the theory of bank funding it is usually simply treated as another form of debt (Calabrese, 2011). Therefore, Deposits is also tied to Trade-off theory in the study.

### **2.1.3. Pecking order theory**

This theory was first suggested by Donaldson in 1961. It starts with asymmetric information as managers know more about their company's prospects, risks and value than outside investors. It postulates that the cost of financing increases with asymmetric information. Financing for the business is known to come from three sources namely internal funds, debt and new equity. Companies prefer using internal funds first before going for debt and will only use equity as the last resort. This theory therefore postulates that companies have a hierarchy of financing sources. This theory was modified popularized by (Myers & Majluf, 1984) where they argued that equity is a less preferred means to raise capital because when managers issue new equity, investors believe that managers think that the firm is overvalued and they are taking advantage of this overvaluation. As a result, investors will place a lower value to the new equity issuance. (Fama & French, 2002) found that some features of the data are better explained by the pecking order than by the tradeoff theory. (Goyal & Frank, 2003), showed that pecking order theory fails where it should hold namely, for small firms where information asymmetry is presumably an important problem. Owing to the presence of information asymmetries between the firm and potential financiers, the relative costs of finance between the financing choices Berk and DeMarzo, (2007). Where the funds provider is the firm's retained earnings, meaning more information than new equity holders, the new equity holders will expect a higher rate of return on capital invested resulting in the new equity finance being more costly to the firm than using existing internal funds Myers and Majluf, (1984). A similar argument can be provided between the retained earnings and new debt-holders. In addition, the greater the exposure to the risk associated with the information a symmetry for the various financing

choices besides retained earnings, the higher the return of capital demanded by each source Berk and DeMarzo, (2007). Thus, the firm will prefer retained earnings financing to debt, short-term debt over long-term debt and debt over equity.

Having enough slack would allow firms to minimize the costs of information asymmetry associated with external financing. Studies show that majority of (CFO) Chief Finance Officers appreciate financial flexibility, more so when the proportion of managerial ownership is higher Graham and Harvey, (2001). According to Graham and Harvey (2001) most managers confirm that debts are issued when their internal funds are insufficient to fund their activities. Sometimes a firm's inability to obtain funds using debt affects their decisions to issue common stock Graham and Harvey, (2001). There is weak support for either the trade-off or the information asymmetry-based pecking-order theory of capital structure, Graham and Harvey, (2001). This theory explains why managers simply prefer internal funds to external borrowing Calabrese, (2011). The pecking order theory is an alternative explanation to predict organizational leverage Calabrese, (2011). Unlike the trade-off theory, increased profitability is expected to result in a decline in leverage, because a more profitable firm is better able to finance capital needs with internal financial resources (such as retained earnings), Calabrese, (2011). At the core of the pecking order theory is the notion that leverage decisions are driven by information asymmetry between management and investors: because investors will view equity (stock) issuances negatively, firms will prefer to finance capital from retained earnings, then debt, and, only having exhausted these options, new equity Calabrese, (2011).

#### **2.1.4. Market Timing Theory**

The theory perceives that managers issue securities depending on the time varying costs of relative equity and debt and thus issuance decisions have a long-term effect on capital structure because the observed capital structure at any particular date is the outcome of prior issuance decision thus firms prefer to issue equity when the relative cost is low and prefer to issue debt when equity cost is high (Linus M. 2013).

Since the promised payments to bondholders are fixed, stockholders are entitled to what is left over after the fixed payments; stock prices are more sensitive than bond prices to any proprietary information about the firm's future performance. If management has favorable information that is not yet reflected in market prices, the release of such information will cause a larger increase

in stock than in bond prices, and so the current stock price will appear more undervalued to managers than current bond prices (Molyneux and Thornton 1992). Implication of this theory is that for a firm to avoid diluting the value of existing stockholders claims, the companies that are profitable uses for more capital but believe their shares not to be undervalued will generally choose to issue debt rather than equity. Conversely managers who think their companies are overvalued are more likely to issue equity and what amounts to the same thing to make stock for stock acquisitions. The importance for management is to recognize here is that most companies issuing new equity those that are undervalued as well as those that are overvalued should expect a drop in their stock prices when they announce the offering.

## **2.2. Overview of Microfinance Institutions role**

Microfinance refers to giving poor and low-income people with no access to financial services through the ordinary formal financial sector the provision of different types of small-scale financial services. The fundamental services that the MFIs provide are the same that conventional financial institutions offer to their clients; the only difference is the scale and method of service delivery (Ledger wood, 1999).

Here is a definition of microfinance used by Gateway (2012) “Microfinance is often defined as financial services for poor and low-income clients offered by different types of service provider” (Gateway, 2012) Some MFIs also provide enterprise development services, such as skills training and social services, these are not included in this definition, and it only focuses on the financial side of microfinance, which I will do in this thesis.

There has been a huge growth in the microfinance industry for over a decade, but there is still a long way to go, it only reaches a small percentage of its potential market worldwide (Ledger wood & White, 2006). Microfinance can be a powerful instrument against poverty, but it is only when supply meets demand that the poor people can find their way out of poverty (Helms, 2006). According to the most recent estimates microfinance has reached one hundred and fifty million individuals worldwide (Armendariz & Labie, 2011) . Still 90 percent of the population of the developing world does not have access to formal sector financial services (Robinson, 2001).

There is a huge demand for small scale commercial financial services among the world's poor and low-income people. The financial services can help them improve household and enterprise management, increase productivity, smooth income flows and consumption costs, enlarge and diversify their micro-businesses, increase their incomes, and empower their way out of poverty. But unfortunately, the formal financial sector is rarely able to cover the demand for these financial services (Robinson, 2001). Credit is often widely available from informal commercial moneylenders, such as commercial moneylenders, pawnbrokers and rotating savings, and credit associations but typically at a very high cost to the client (Ledgerwood, 1999; Robinson, 2001).

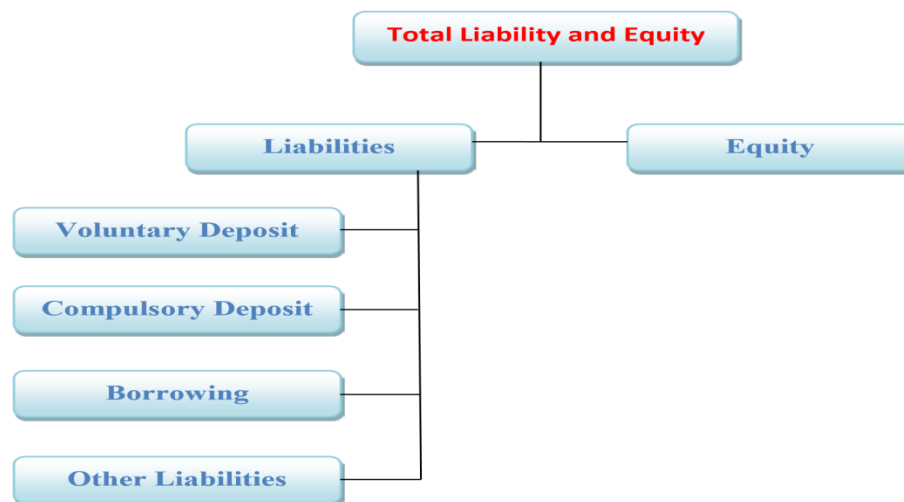
The Ethiopian microfinance sector rather is characterized by its rapid growth, an aggressive drive to achieve scale, a broad geographic coverage, a dominance of government backed MFIs, an emphasis on rural households, the promotion of both credit and savings products, a strong focus on sustainability and by the fact that the sector is Ethiopian owned and driven. The industry has a strong focus on loans to the very poor, as indicated by the relatively small loans when compared to neighboring countries. Sector outreach is impressive and the financial performance of the sector is considered good, although the operational margins and profitability are low. MFIs have also mobilized a significant amount of savings, thereby improving financial as well as operational sustainability (MFT, 2011).

### **2.3. Capital Structure of Microfinance**

Like other businesses, the financial structures of MFIs include two major parts: total liabilities and total equity (see Figure 2.1). Total liabilities, sometimes called total debts, typically include voluntary deposits, compulsory savings, debts and other owners have invested. Before deciding to start a new business or to expand a current one, one of the first questions is how to raise money or funds to finance the operation based on the business plans. Fundamentally, there are two main separate categories of financing instruments that an MFI can choose: liabilities financing and equity financing (Mullineux and Murinde, 2001). There has been discussion on which is the best option: debt or equity financing?

Choosing between liabilities and equity financing regularly creates a dilemma, since the answer always depends on the particular situation of each MFI. Each instrument has its own pros and cons; therefore, a mix of liabilities and equity financing is constantly the optimal strategy, with favorable financial leverage to maximize the benefits for shareholders based on their advantages.

Figure 2.1. Financial Structure of MFIs



**Sources:** Adapted from Hsu (2007), MIX Market (2009), Sapundzhieva (2011) and Hermes et al. (2011).

### 2.3.1. Equity Financing

Equity financing refers to the act of raising money to finance business activities by issuing stocks (common or preferred stocks) to the current owners or potential investors. This form of financing enables firms to receive more investment funds from the current owners and potential investors with or without borrowings for their startups or when they need to raise additional equity to offset existing debts.

At the early stages of a new business, owners need to invest their own money to finance the startup operations. As the business is a separate entity from its owners, these investments create a liability in the shape of capital. In accounting and finance, owners' equity is the residual interest or claim of owners in assets after all other liabilities are paid (Delloite, 2010). If total debts exceed total assets, negative equity exists. This means that creditors would not be able to get enough money back from their debts, and nothing is left over to reimburse owners' equity. Thus, owners' equity is also known as risk or liable capital.

It is widely accepted that firms with high profitability and poor credit ratings often rely on equity financing to fund their new or small businesses. It is also ideal for startups and newly launched firms, since they do not have a solid track record of success and face uncertainty in the early stages of development. There are three main methods of raising equity: retained profits, rights issues and new issues of shares to the public. (Chas now and Johnson, 2010).

### **2.3.2. Liabilities Financing**

Liabilities financing, also called debt financing, refers to the borrowed money which a firm must pay back to lenders with interest after a specific agreed period of time. Firms tend to rely on debt financing to fund their businesses if they are well established and have steady sales, solid collateral and profitable growth. Due to lack of sufficient funds (equity), firms always use borrowed money as an extra source of finance to expand their businesses. Debt may be a good option, but it can be very dangerous if firms do not have in-depth knowledge of the pros and cons of the financial instrument.

The main advantages of debt financing are: - owners can maintain maximum control over their business without sharing control and profit with lenders, the firm has no other obligations apart from the repayment of the loans (the principal and interest) to the lenders and interest on debts is tax deductible to corporate income tax. This means that it shields a part of the income from taxes and lowers tax liability every year.

However, there are also a number of disadvantages of debt financing. Firms have to show lenders how they are going to repay the loans, and secure loans against their assets as collateral. In addition, they may have large loan repayments for startup' costs. Thus, whenever they use debt financing, they run the risk of bankruptcy. The higher the level of debt financing, the higher the risk. Clearly, debt financing can bring some benefits to shareholders, but over-reliance on this financing instrument creates a negative impact on their credit ratings and makes it difficult to raise funds in the future.

### **2.3.3. Deposits**

Deposits refer to the sum of savings deposited in financial institutions. They are categorized according to the type of client (individual vs. institution) and different products. In microfinance, there is an additional category which includes disclosures of voluntary deposits vs. compulsory deposits (MIX Market, 2011). These terms are often mixed and inappropriately used. Therefore,

the correct use of these terms plays an important role in achieving the objectives of MFIs. Voluntary deposits are characterized by convenience and return the ability to deposit and withdraw at will and earn interest at the market driven rates (Branch and Klaehn, 2002). Compulsory savings refer to a sum of money which borrowers have to save at regular intervals with MFIs as a condition for receiving a loan. They are considered as collateral and used to cover missed payments (CGAP, 1997 and 2011a). These savings typically provide clients with little or no choice of saving products, but teach them how to make micro savings. These savings are collected indirectly through groups (group lending) or directly from individuals (individual lending), only one time when the poor receive loans, or many times on a regular basis. The borrower can withdraw immediately upon repayment of the loan. In contrast to saving up, compulsory saving is a kind of saving down, by taking an advance loan from lenders and repaying through the series of savings (Rutherford, 2000). It suggests that the poor are usually not permitted to have compulsory saving, unless they borrow. They also provide a source of lending and investment funds for MFIs. However, they do not, in fact, provide a sufficient volume of funding for the lending activities of MFIs (Branch and Klaehn, 2002; Wisniewski, 1999).

In contrast, voluntary deposits refer to the savings deposited voluntarily by public clients. There are different types of deposits with various features related to interest rate and withdrawal ability, such as current account deposits, savings deposits, time deposits, monthly income schemes or fixed deposits. Most deposits are basically voluntary savings and are withdrawable any time, apart from time deposits (Seibel, 1999; Giehler, 1999). Voluntary deposits refer to the saving up of small amounts of money to accumulate assets, with the plan to use them in the future (Rutherford, 2000).

Voluntary deposits assume that the economically active poor already save in a variety of forms, and that they do not need to be taught to save, as previously mentioned. If MFIs aim to collect savings from the public, they need to learn to provide a choice of saving products appropriate for clients' demand, particularly for the poor. This is consistent with the fact that two of the biggest obstacles to serving low-income depositors are the distance and the products. Deposits are always the primary source of funds of financial institutions and can be divided into three main types: current account deposits, savings deposits, and time deposits (Giehler, 1999).

Deposits are a relatively stable and low-cost source of funds. They help MFIs to achieve independence from donors and investors, which is particularly important in periods of liquidity constraints (Morduch and Haley, 2002). Deposits are more than half of the total assets reported by financial institutions that have deposit mobilizations (Gonzalez and Meyer, 2009) because depositors enjoy certain benefits, such as access to loans (Wright, 1999; Elser et al., 1999).

There are some arguments over whether or not the deposit mobilizing MFIs are really serving small depositors (micro-savings). Based on the combined database of MIX Market Micro Banking Bulletin for 2007 (MBB, 2008), Gonzalez and Meyer (2009) state that most deposit mobilizing MFIs were reaching small depositors, perhaps even smaller than their borrowers. This result suggests MFIs have been able to design and mobilize voluntary deposits to meet the special needs of the people who are poor or even poorer than their borrowers. Therefore, not all MFIs have succeeded at micro deposit mobilization.

#### **2.3.4. Borrowings and other Liabilities**

Borrowings are loans or money borrowed from other financial institutions in the short- or long term (especially from local commercial banks, development banks, central banks or international financial organizations) (MIX Market, 2009). Even though debts are the commercial funds generally priced at the market rate and may be expensive for new or small MFIs, they are currently the most popular funding source for lending when MFIs have limited ability to obtain savings from the public (Sapundzhieva, 2011).

Other liabilities are investment funds from other external sources (such as soft loans or grants from local or international donors). They also are mixed with other funding sources (such as commercial debts) to make the interest rate lower than the market rate (MIX Market, 2009).

To sum up, MFIs have three main sources to fund their potential growth: equity, deposits and debts. Each fund has different costs which contribute to the lending interest rate. Besides reducing operating expenses by becoming cost-effective, MFIs try to obtain low-cost funds such as soft loans or public deposits to combine with other commercial funds to reduce costs. Clearly, commercial debts are necessary to fund the continued expansion of microfinance to meet the increasing demand for well-designed financial services for the poor, as previously mentioned.

## **2.4. Firm Financial Performance (Profitability)**

Profit is the major motive of a business. An enterprise should earn profits to survive and grow over a long period of time. It provides evidence concerning the earnings potential of a company and how effectively a firm is being managed. If the enterprise fails to make profit, capital invested is eroded and if this situation prolongs the enterprise ultimately ceases to exist.

A profitable financial sector is better able to withstand negative shocks and contribute to the stability of the financial system. Important changes in the operating environment particularly credit risk is likely to affect MFIs profitability. Empirical analysis finds that both MFIs specific as well as macroeconomic factors are important determinants in the profitability of microfinance institutions, (Westfield, 2008). (Brealey and Myers 2003) argue that there are various important measures in determining profitability of an organization. These include; Return on Assets (ROA) and Return on Equity (ROE).

Profitability measures, such as return on equity and return on assets, tend to summarize performance in all areas of the company. If portfolio quality is poor or efficiency is low, this will be reflected in profitability (Micro Rate & Inter-American Development Bank, 2003, p. 3). But in the same guide they also point out that all performance indicators tend to be of limited use (in fact, they can be outright misleading) if looked at in isolation and this is particularly the case for profitability indicators (Micro Rate & Inter-American Development Bank, 2003).

To measure the profitability of MFIs we can use Return on Equity, Return on Assets and Portfolio Yield as indicators (Micro Rate & Inter-American Development Bank, 2003).

### **2.4.1. Profitability Measures**

The two major methods of measurements of profitability are: the traditional accounting-based measurements and economic measurements of profitability. In economic measurements of profitability, the two common methods are: Risk-Adjusted Return on Capital (RAROC) and economic value added (EVA), which are the economic based metrics of economic profits. Following Kimball study as cited in (Ommeren, 2011) these metrics are taken into account risks and opportunity costs of equity when measuring the profitability.

But related to Ommeren (2011) study, although, numerous banks disclose RAROC and EVA economic profit metrics, academic literature does not use these measures to analyze banks' and

other financial institution's profitability, because the disclosed parameters are subject to internal policies and assessments which cannot be generalized or validated. So, this project attempts to discuss more on accounting measurements of profitability. The traditional accounting-based measures are easy proxies of MFIs' profitability, obtainable from public disclosed information. As concluded by extensive prior academic researches there are different accounting-based measures for financial institutions' profitability. For instance, return on Equity (ROE) used by Goddard et al, (2004), Berger & Bonaccorsi-diPatti, (2006). Abor (2005), Silva (2008), Return on Assets (ROA) used by (Flamini et al., 2009, return on equity (ROE) and Return on Assets (ROA) used by Athanasoglou et al, (2006), Ommeren (2011) and Demircuc-Kunt and Huizinga (1999) uses as proxy for profitability.

#### **2.4.1.1. Return on Asset**

The return on assets ratio measures how effectively a company can earn a return on its investment in assets. In other words, ROA shows how efficiently a company can convert the money used to purchase assets into net income or profits. Since all assets are either funded by equity or debt, some investors try to disregard the costs of acquiring the assets in the return calculation by adding back interest expense in the formula.

It only makes sense that a higher ratio is more favorable to investors because it shows that the company is more effectively managing its assets to produce greater amounts of net income. A positive ROA ratio usually indicates an upward profit trend as well. ROA is most useful for comparing companies in the same industry as different industries use assets differently. For instance, construction companies use large, expensive equipment while software companies use computers and servers.

#### **2.4.1.2. Return on Equity**

The most common measures of profitability in commercial institutions is return on assets (ROA), which reflects an organization's ability to deploy its assets profitably, and return on equity (ROE), which measures the returns produced on the owners' investments (Lafourcade et al., 2005). ROE is a ratio of Income to its total equity. It measures the ability of the MFIs management to generate income by utilizing company equity at their disposal. In other words, the return on equity ratio shows how much profit each dollar of common stockholders' equity generates. So a return on 1 means that every dollar of common stockholders' equity generates 1

dollar of net income. This is an important measurement for potential investors because they want to see how efficiently a company will use their money to generate net income.

#### **2.4.1.3. Net Interest Margin (NIM)**

NIM is a measure of the difference between the interest income generated by microfinance and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest earning) assets. It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income in that time period (the average earning assets). The NIM variable is defined as the net interest income divided by total earnings assets (Gul et al., 2011).

Net interest margin measures the gap between the interest income the microfinance receives on loans and securities and interest cost of its borrowed funds. It reflects the cost of microfinance intermediation services and the efficiency of the microfinance. The higher the net interest margin, the higher the microfinance profit and the more stable the microfinance is. Thus, it is one of the key measures of microfinance profitability. However, a higher net interest margin could reflect riskier lending practices associated with substantial loan loss provisions (Khrawish, 2011).

### **2.5. The Link between capital structure and Financial Performance**

Economic profit (or loss) refers to the difference between total revenues and all expenses. Responding to profit incentives, firms tend to try to increase total revenues and decrease total expenses (including costs of capital). In the case of a financial institution, financial expenses (costs of funding) usually represent a large part of total costs, but this part is more difficult to control by the financial institution, while the revenues depend mostly on the interest on loans provided to borrowers (De Aghion and Morduch, 2005). Therefore, financial structure in terms of funding has become one of the important issues for MFIs in gaining efficiency and sustainability. The effects of capital structure can be positive or negative due to their positive contributions to total financial revenue (i.e., the predicted effects are indeterminate and depend on the specific circumstances of each MFI). However, the increase in financial expenses is always expected to be lower than the increase in financial revenues.

## **2.6. EMPIRICAL REVIEW**

Abor (2005) on “The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana”, show a significantly positive relation between the short-term debt ratio and profitability (measured by ROE). However, a negative relationship between long-term debt ratio and profitability was established. But in terms of the relationship between total debt ratio and profitability, the results of his study indicated as significantly positive association between total debt ratio and profitability (Abor, 2005). There have also been a number of other studies providing empirical evidence supporting this positive relationship between debt level and firm’s performance (Champion, 1999; Gill, Bigger, & Mathur, 2011; Headlock & James, 2002; Hutchinson, 1995; Roden & Lewellen, 1995; Taub, 1975). Vitar, D.A., (2013) mainly analysed the relationship between the capital structure and the exporters of semi-conductor components and performance of the listed banks he took for the study. The study was conducted among the banks in Ghana. From the study we can clearly come to a conclusion that there is a negative relationship among the performance and capital structure. The study analyses that this was happening mainly because the short-term debt was over dependent and it causes low rate of marketing activities and high disposal rates.

Loyal AM (2013) has explained about the profitability and the strength of Government banks in India. He also explained about how the banks perform effectively and the capital structure of the banks. He mainly used multivariate analysis in order to analyse the relationship between various components like earning per share, return on equity and return on assets with the help of capital structure.

Raj Kumar P (2014) mainly analyses the relationship between the monetary leverage and performance of John keells in srilanka, the period he took for the study was from 2007-2012. from his result we can clearly interpret that there is negative relationship between the components i.e. monetary performance and leverage of that company. Nassar (2016) investigated on the impact of capital structure on financial performance of firms listed at the Istanbul Stock Exchange. He analyzed a total of one hundred and thirty-six firms over a period of eight years from 2005 to 2012. The capital structure variable was measured by the debt ratio and financial performance variables were return on assets, return on equity and earnings per share. The study

found that there is a negative significant relationship between capital structure and firm performance.

Mujahid & Akhtar (2014) which sought to evaluate the impact of capital structure on firms' financial performance and shareholders' wealth in the textile sector of Pakistan established that capital structure positively impacts on the firms' financial performance and shareholders' wealth. This study sampled one hundred and fifty-five textile firms in Pakistan for six years from 2006 to 2011. The dependent variable was financial performance which was measured by return on assets, return on equity and earnings per share. The independent variable was capital structure which was measured by debt-to-equity ratio.

Gharaibeh (2015) revealed that capital structure represented by total liabilities to total assets, has significantly positive impact on the performance of the firm represented by return on equity. Badar and Saeed study showed the impact of using leverage in firm's capital structure on firm's performance. They applied study on all firms of food sector listed on Karachi stock exchange. The paper covered a period of five years from 2007-2011. The capital structure variables were three variables, long term debts to total assets (LTDTA), Total debt to Equity (TDE), and Short-term debts to Total assets (STDTA). and they measured firm performance by Return on Assets (ROA) and Assets Turnover Ratio (ATO), they found that long term debts have a positive and significant impact on firm performance, while, short term debts have negative significant impact of on firm performance. Saleem (2013) revealed that the some expert of corporate finance believed that capital structure of a firm can maximize firm's overall value with the help of minimizing its cost of capital which is very debatable issue discussed in corporate finance theory about capital structure to evaluate its impact on overall firm's market value. In above given statement we can inference the result as some of the corporate finance analysts think that for the purpose of increasing firms value in the market the firms have to minimize their cost of capital and given the less returns to the borrowers from which they finance their debt.

Li & Cui (2003) implies that to increase the worth of equity for shareholders managers make decisions of financing their operations according to capital structure theories. The basic goal of the managers is to maximize the value of the firm by attaining higher profits those results in the maximization of shareholders wealth so we can say that capital structure substantially affects the

shareholder's wealth. An & Heng (2011) revealed that there is some kind of relationship between firm's financial performance and capital structure of the firm either positive or negative. Velnampy & Niresh (2012) revealed that profitability of the firm's is dependent upon the capital structure decisions of the firm having the different debt and equity combination that can well suited to increase the profitability of the firm. The important part of the firm's financial strategy is to prosperous choice and use of its capital. The relationship between firm's capital structure and the firm's profitability is very significant as the profitability of the firm can be directly affected by the capital structure decisions of the firms. Decision about firms Capital structure is very important element in the firm's overall strategy.

Skopljak & Luo (2012) Agency cost theory defines that difference of the goals of Managers and the owners of the firms can affect the overall performance of the firm in terms of its market value and profitability.

Salteh paper explores the impact of capital structure on firm performance in Iranian corporations listed as a vehicles and parts manufacturing economic sector in Tehran Stock Exchange (TSE). To measure firm performance, they used five variables including, Return on Assets (ROA), Return on Equity (ROE), Tobin's Q, Earning per Share (EPS), and equity market value to equity book value (MB/ VR). While they measure capital structure by, Long-Term Debt, Short- Term Debt and Total Debt to Total Assets, and Total Debt to Total Equity. The findings referred to a positive and significant relation between capital structure and ROE, MB/VR, and Tobin's Q, while, showed a negative relation with ROA, and EPS.

Ahmad study discussed the influence of capital structure on firm performance of Malaysian firms listed as consumers and industrials sectors in Malaysian equity market from 2005 to 2010, to measure firm performance they use return on equity (ROE) and return on asset (ROA), and to measure capital structure they use long-term debt (LTD), short-term debt (STD), and total debt (TD). The study results that each of debt level has significant negative relationship with ROE, while ROA has significant positive relationship only with STD and TD.

Iorpev and kwanum study investigates the relationship between capital structure and firm performance of manufacturing companies listed on the Nigerian Stock Exchange. They covered a period of five (5) years from 2005-2009. The study used multiple regression analysis to

examine firm performance indicators such as Profit Margin (PM) and Return on Asset (ROA), while, the capital structure variables were, Long term debts to Total assets (LTDTA), Short-term debts to Total assets (STDTA), and Total debt to Equity (TDE). They found that STDTA and LTDTA have insignificant negative relationship with ROA and PM; while TDE has positive relationship with ROA and negative relationship with PM. STDTA is significantly related with ROA while LTDTA is significantly related with PM. The study concludes that capital structure is not a main determinant of firm performance.

Onaolapo and Kajola study investigates the influence of capital structure on financial firm performance, applied on non-financial firms listed in Nigerian Stock Exchange according the period from 2001 to 2007. To examine capital structure, they used Debt Ratio (DR), while used Return on Assets (ROA), and Return on Equity (ROE) to examine firm performance. They found that capital structure has a significantly negative impact on financial firm performance.

## **2.7 Knowledge Gap**

In this chapter the discussion was about the essential theories namely: Trade-off theory, pecking order theory and market timing theory and other related empirical studies that influence capital structure on firm financial performance. From the theoretical and empirical studies point view, there are contradicting conclusions existed between empirical studies about the effect of capital structure on financial performance of companies. In line with this theories and empirical studies, we observed that, capital structure affects the financial performance of firms in to positively or negatively.

Therefore, evaluating the effects of capital structure on the profitability of all business firms is important, especially for financial industry like microfinance institutions. The performance of MFIs can be affected by different factors such as company specific, macroeconomic and regulatory factors. From those factors the firm financing decision is the most crucial parts in these business activities. According to the empirical studies, there is no direct empirical literature which is related with effect of capital structure on profitability of MFIs in Ethiopia. So far, as to the knowledge of the researcher, there is no study directly linked with it. Even the existing studies were concentrated on determinates of capital structure and financial performance of commercial banks, insurance company, constriction, manufacturing companies and other listed

firms. Therefore, the objective of this study is the impact of capital structure on the financial performance of microfinance institution in Ethiopia.

## **CHAPTER THREE**

### **Research Design and methodology**

#### **3.1. Introduction**

This chapter discuss about the methodology of the researches to conduct this study. This section explains the description of study area, Research design, source and methods of data collection, provides details regarding the target population, sample frame and sampling technique and the sample size, description of variable and hypotheses of the study, model specification and method of data analyses.

#### **3.2. Description of the study area**

The study subjects were microfinance institution in Ethiopia. Among the entire microfinance institutions, the study area mainly focused on twenty microfinance institutions in Ethiopia based on the available data.

#### **3.3 Research design**

Research designs were planed and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2009).

This study adopted an explanatory design by using panel research design to meet the research objective. As explained by Anol. (2012), explanatory research attempts to identify causal factors and outcomes of the target phenomenon. On the other hand, according to Brooks (2008), a panel data were embody information across both time and space and it measures some quantity about them over time.

#### **3.4. Research Approach**

Research designs were planed and the procedures for research that span the decisions from broad assumptions to details methods of data collection and analysis (Creswell 2009). Therefore, in order

to achieve the objective states in the preceding section, considering the nature of the problem and the research perspective this study uses research approach based on secondary data.

Accordingly, the quantitative method will be used to find out the impact of capital structure on financial performance of microfinance institutions in Ethiopia, and the financial data will be collected through document survey. This is because quantitative approach is an inquiry that grounded in the assumption that features of social environment constitute an objective reality that is relatively constant across time and setting (Gall et al. 1996 as cited in Manning and McMurray, 2010).

According to Li Yuqi (2007), secondary data have its own advantages. That is, secondary data generally provide a source of data that is both permanent and available in a form that can be checks relatively easily by others and increases the dependability of the data, hence ensure data quality. As a result, the data for the microfinance institutions capital structure and financial performance (profitability) indicator variables is obtained from audited financial statements that are presented in National Bank of Ethiopia, office of microfinance supervision directorate. In order to avoid the risk of distortion in the quality of data, the data is the audited financial statements particularly balance sheet and income statement.

The study includes a sample of 20 microfinance institutions from the total microfinance institutions in Ethiopia. Accordingly, this study used panel data of twenty (20) microfinance institutions for nine years (2010 to 2018) financial statements.

### **3.5. Source and method of data collection**

The sources of data for this research were secondary data sources. Data was collected from the annual report of national bank of Ethiopia (NBE) and association of microfinance institutions on each selected includes in the sample. The data were collected from 2010 to 2018 on annual bases.

### **3.6. The target population and Sampling frame**

The study population includes all microfinance institution in Ethiopia. There are around 35 microfinance institutions in our country. The sampling frame for drawing the sample includes those microfinance institutions having at least nine years of experience and accessible data. According to National Bank of Ethiopia (NBE), there were a total number of thirty-five (35) microfinance institutions operational in Ethiopia. Therefore, in order to have better representative results and conclude for the entire population, the target population of microfinance institutions thus the researcher used purposive sampling by considering the availability of full data for the selected time period. Among the MFIs, 20 of them have nine (9) years from (2010-2018) available of full data for the selected time period.

### **3.7. Data Analysis Method**

To achieve the objectives of the study, panel data of twenty microfinance institutions for nine years (2010 to 2018) were used. This was because of that panel data has the advantage of giving more informative data as it consists of both the cross-sectional information, which captures individual variability, and the time-series information that captures dynamic natures of the data. Hence it ensures more variability, more degrees of freedom, more efficiency, and less collinearity among variables (Gujarati, 2004).

### **3.8. Model Specification and Variable Presentation**

#### **3.8.1. Variable Presentation**

This study used explanatory variables such as: total debt to total asset, total debt to total equity, long term debt to total asset and firm size ratios, while the dependent variable was return on asset. The variables descriptions were stated below.

##### **3.8.1.1. Dependent Variable**

MFIs profitability is the dependent variable in this study. MFIs performance is usually measured by three alternative measures ROA, ROE or NIM. Studies conducted on this area used one or a

combination of these ratios as a measure of performance in their analysis. According to Mohana et al. (2012), the choice of the financial performance ratios (ROA, ROE, NIM) depends on the objective of the performance measure since the output of each of the performance measure differs.

#### **3.8.1.1.1. Return on Asset (ROA)**

The return on assets ratio measures how effectively a company can earn a return on its investment in assets. In other words, ROA shows how efficiently a company can convert the money used to purchase assets into net income or profits. Since all assets are either funded by equity or debt, some investors try to disregard the costs of acquiring the assets in the return calculation by adding back interest expense in the formula.

It only makes sense that a higher ratio is more favorable to investors because it shows that the company is more effectively managing its assets to produce greater amounts of net income. A positive ROA ratio usually indicates an upward profit trend as well. ROA is most useful for comparing companies in the same industry as different industries use assets differently. For instance, construction companies use large, expensive equipment while software companies use computers and servers.

Return on asset (ROA) is calculated by the following formula:

$$\text{ROA: } \frac{\text{Net Income}}{\text{Total Asset}}$$

#### **3.7.1.2. Independent Variables**

The explanatory (independent) variables in this study are total debt to total asset ratio, total debt to total equity ratio and long-term debt to total asset ratio. These serve as a rep for debt financing.

### **3.7.1.2.1. Total debt to total asset ratio (TDTAR)**

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.

Debt to asset ratio is similar to debt-to-equity ratio which shows the same proportion but in different way. The debt ratio is calculated by dividing total liabilities (i.e., long-term and short term liabilities) by total assets:

$$\text{Total debt to total Asset ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

### **3.7.1.2.2. Total debt to Total equity Ratio (TDTER)**

The debt-to-equity (D/E) ratio is calculated by dividing a company's total liabilities by its shareholder equity. These numbers are available on the balance sheet of a company's financial statements. The ratio is used to evaluate a company's financial leverage. The D/E ratio is an important metric used in corporate finance. It is a measure of the degree to which a company is financing its operations through debt versus wholly-owned funds. More specifically, it reflects the ability of shareholder equity to cover all outstanding debts in the event of a business downturn. The debt-to-equity ratio is a particular type of gearing ratio (Will Kenton and Adam Hayes, 2019).

$$\text{Total debt to total equity ratio} = \frac{\text{Total debt}}{\text{Total shareholder's equity}}$$

### **3.7.1.2.3. Long term debt to total asset ratio**

The long-term debt-to-total-assets ratio is a measurement representing the percentage of a corporation's assets financed with long-term debt, which encompasses loans or other debt obligations lasting more than one year. This ratio provides a general measure of the long term debt

to asset its financial obligations for outstanding loans (Will Kenton, 2019). The -term debt-to-total asset ratio is a coverage or solvency ratio used to calculate the amount of a company’s leverage.

$$\text{Long term debt to total asset Ratio} = \frac{\text{Long-term debt}}{\text{Total asset}}$$

### 3.7.1.2.4. Interest Coverage Ratio

The interest coverage ratio (ICR) is a measure of a company's ability to meet its interest payments. 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. It determines how easily a company can pay interest expenses on outstanding debt. Interest c overage ratio is also known as interest coverage, debt service ratio or debt service coverage ratio. The interest coverage ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) by the company's interest expenses for the same period. Pandey (2010) indicates the ratio of net operating income (or EBIT) to interest charge.

The lower the interest coverage ratio shows the higher the company's debt burden and the greater the possibility of bankruptcy or default. A lower ICR means less earnings are available to meet interest payments and that the business is more vulnerable to increases in interest rates. 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, a high ICR may suggest a company is “too safe” and is neglecting opportunities to magnify earnings through leverage. Due to the above stated facts in this study a positive relationship between interest coverage ratio and profitability was expected.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest expense}}$$

### **3.7.1.3. Control Variables**

There were a number of factors that affect the microfinance institutions financial performance (profitability) rather than capital structures effect; this is why control variables are included in the model. In this study the researcher employed firm size variables.

#### **3.7.1.3.1 Asset Size (FSIZE)**

Asset size of MFIs was considered in this study as a control variable. In addition to its role as a control variable, size is introducing to determine whether economies or diseconomies of scale exist in the microfinance sector of Ethiopia.

Opoku et al. (2013) used as a control variable in the study of the impact of capital structure and profitability of financial institutions on the Ghana Stock Exchange. Arkhavein (1997) found a significantly positive association between size and financial institutions profitability. Moreover, Short (1979) suggested that that since relatively large financial institutions tend to raise less expensive capital and hence appear more profitable, size is closely related to capital adequacy of a financial institutions. The implication is that as MFI size increases, profitability increases as well.

For the purpose of this study, MFIs size has been taken as the natural logarithm of their total assets of the institutions. The use of logarithm enables to get the real total assets of the MFIs due to its capability to standardize values thus bringing them on the same plat form for a more efficient analysis to be do and based on the above and theoretical ground, in this study a positive relationship between asset size and profitability is expects.

### **3.7.2. Model Specification**

The study employs Return on Asset (ROA) as dependent variable which measures company's financial performance. Although there is no unique measurement of financial performance in the literature, ROA is choosing because it has important accounting base and widely accepted measures of financial performance; and the independent variables are Total Debt to Total Asset Ratio (TDTAR), Total Debt to Total Equity Ratio (TDTER), interest coverage ratio (ICR) and Long-Term Debt to Total Asset Ratio (LTDTAR) to measure total debt level. These variables serve as

proxies for capital structure. However, a number of factors could have impacts on company's financial performance; hence, the need for control variables to include Firm size (FSIZE) in the model is obvious.

The models for this study derived on the basis of prior studies such as Osuji and Odita (2012), Memon e t.al (2010), Ahmed e t.al (2012) and Abor (2005) and this equation is believing to capture the essence of the subject under study. The general model of this study, as found in other empirical literature is represented by;

$$Y_{et} = \alpha + \beta X_{it} + \mu_{it}$$

Where:

$Y$  = is the dependent variable.

$\alpha$  = is the intercept (constant variable)

$\beta$  = is the coefficient of independent variable.

$X$  = is the independent variable.

$\mu$  = are the error terms.

$i$  = is the number of firms.

$t$  = is the number of time periods.

The subscript is representing the cross-sectional dimension and denotes the time-series dimension.

$$ROA_{i,t} = \alpha + \beta_1 (TDTAR)_{i,t} + \beta_2 (TDTER)_{i,t} + \beta_3 (LTDTAR)_{i,t} + \beta_4 (FSIZE)_{i,t} + \beta_5 (ICR)_{i,t} + \mu_{i,t}$$

Where, “i” denote the studied microfinance institutions and

“t” represent the time period.

FSIZE is the natural logarithm of total asset

ICR is interest coverage ratio

LTDTAR is long term debt to total asset ratio

ROA is return on asset

TDTAR is total debt to total asset ratio

TDTER is total debt to total equity ratio and

$\mu$  is error term

## **CHAPTER FOUR**

### **Data Analysis and Presentation**

#### **4. Introduction**

The preceding chapter determined the way a researcher used to conduct an empirical analysis and discussion. Consequently, this chapter presents the results of the data analysis and the findings from the study in relation to the research objectives and in consistence with the literature reviewed in chapter two. The analyses are based on secondary data obtained from annual financial reports of the subject companies under study. The first subsection presents descriptive statistics, CLRM Assumption and correlation analysis, the regression results and interview results. Finally, the findings were interpreted in relation to the research objectives.

#### **4.1. Descriptive Statistics**

This section presents the descriptive statistics of dependent and independent variables used in the study for the sample MFIs. The dependent variable used in this study was ROA while the independent variables are total debt to asset ratio, total debt to equity ratio and long term debt to asset ratio. Thus, the total observation for each dependent and independent variable was 180 (panel data of 20 MFIs for 9 years). The table 4.1 demonstrates the mean, median, maximum, minimum and standard deviation values for dependent and independent variables for sample MFIs over the year 2010-2018. The descriptive statistics for the dependent and independent variables are presented in Table 4.1 below:

Table 4.1 Descriptive Statistics of Dependent and Independent Variables

	ROA	TDTAR	TDTER	LTDTAR	ICR	FSIZE
Mean	0.068015	0.597225	1.841313	0.069206	0.788627	4.887203
Median	0.092621	0.617209	1.575773	0.000000	3.070765	4.813568
Maximum	0.801429	1.104909	18.09570	0.480363	82.52000	7.089215
Minimum	-1.078018	0.107232	-19.19731	0.000000	-100.2482	2.796241
Std. Dev.	0.291049	0.175788	2.675389	0.113280	22.43153	0.953899
Observations	180	180	180	180	180	180

Source: *Computed from Eviews result*

As measured in the above table 4.1, the mean value of ROA, a measure of profitability (dependent variable) which is measured by dividing Net Income by Total Asset of the institution has a mean value of 0.07. This result revealed that on average for every birr investment in MFIs equity would earn a 6.8 percent return. The other measure, median which is not affected by extreme values similarly shows that microfinance institutions have a returns of 9.26 percent financed through their Asset. The higher ROA shows that the company is more efficient in using its resources and reflects the ability of management to generate profits from the MFIs asset. The maximum ROA was 0.80 and the minimum value was -1.08. This means the most profitable MFI earns 0.80 cents income and the list profitable MFI earns -1.08 cents income for a single birr investment in the firm’s asset. The standard deviation 0.29 reflects the presence of variation in earned profit among across the sampled MFIs.

The independent variable, debt ratio, which is measured by total debt divided by total asset of MFIs have a mean and median value of 59.7 percent and 61.7 percent respectively, that means during the study period the sampled MFIs finance their assets by using 59.7 percent of debt. In addition the maximum and minimum values are 1.11 and 0.11 respectively. The values of debt asset ratio

deviate from its mean to both side by 17.6 percent. In general, the mean value of 59.7 percent in debt asset ratio indicates that, microfinance institutions are one of highly levered institutions in the country.

The other independent variable, debt to equity ratio measured by dividing total debt to equity ratio debt ratio of MFIs have a mean and median value of 184.1 percent and 157.5 percent respectively, that means during the study period the sampled MFIs finance their assets by using 184.1 percent of debt. In addition, the maximum and minimum values are 18.09 and -19.19 respectively. The values of debt equity ratio deviate from its mean to both side by 267.5 percent. In general, the mean value of 184.1 percent in debt equity ratio indicates that, microfinance institutions are one of highly levered institutions in the country.

Long term debt to asset ratio represented by loan term debt divided by the total asset of the sample MFIs in the study period has a mean and median value of 6.92 percent and 0.00 percent respectively, that means during the study period the sampled MFIs finance their assets by using 6.92 percent of debt. In addition, the maximum and minimum values are 0.48 and 0.00 respectively. The values of long-term debt to asset ratio deviate from its mean to both side by 11.3 percent. In general, the mean value of 6.92 percent.

As it is shown in table 4.1 above, the other variable used in the study was the interest coverage ratio, which is measured by earnings before interest and taxes (EBIT) divided by interest expenses during the study period of one year. The interest coverage ratio has a mean value of 0.79. This result shows that on average the sample MFIs are more capable to meeting its interest obligations from operating earnings. Taking into consideration the standard deviation of the MFIs under study, it is clear that standard deviation of 22.43, implying that MFIs are paying the interest payments on its debt with their earnings.

The mean of firm size was represented by natural logarithm of book value of total assets has a mean value of approximately 4.89, with a maximum and minimum value for the sample MFIs in the

study period were 7.09 and 2.79 respectively. In addition, the standard deviation of the size of the MFI was 0.95. This shows the variation in the total assets of MFIs in the study period.

## 4.2. Correlation Analysis

Correlation analysis provides the linear relationship between the dependent variable (financial performance) and explanatory variables including both the independent and control variables by using correlation matrix. Correlation matrix helps to quantify the extent to which two quantitative variables, dependent and independent variables, go together. Values of the correlation coefficient are always being in between -1 and + 1. The sign of the correlation coefficient determines whether the correlation is positive or negative (direct or inverse); whereas, the magnitude of the correlation coefficient determines the strength of the correlation. Accordingly, the closer the correlation coefficient to +1, the stronger the positive correlation would be and if the correlation coefficient is close to -1, it indicates a strong negative correlation in between considered variables. However, if the coefficient of the correlation approaches to zero (0) it inform us, there would be little or no linear relationship exists among the variables. Hence, the analysis of the relationship between dependent variable (ROA) and independent variables (TDTAR, TDTER, LTDAR and ICR) is detailed in Table 4.2 as follows using the correlation matrix.

Table 4.2 Correlation Matrix for Dependent and Independent Variables

	ROA	TDTAR	TDTER	LTDAR	ICR	FSIZE
ROA	1					
TDTAR	-0.073369	1				
TDTER	0.019820	0.311356	1			
LTDAR	0.200516	0.150083	0.055166271	1		
ICR	0.920429	0.045179	-0.010884	0.140561	1	
FSIZE	0.427817	0.319936	0.280091	0.180657	0.353330	1

Source; Computed from Eviews result

Table above, shows the correlation coefficient between the dependent variables and independent variables. Among the independent variables TDTER, LTDTAR and ICR are positively correlated with ROA with correlation coefficient of 0.019820, 0.200516 and 0.92042 respectively. While TDTAR is negatively correlated with ROA with correlation coefficient of -0.073369. ICR has shown the highest positive coefficient of 0.977801 with respect to ROA.

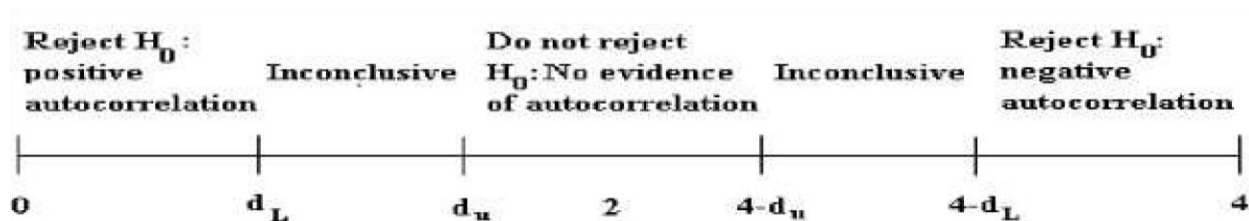
### 4.3. Classical Linear Regression Model Assumptions and Diagnostic Test

#### 4.3.1. Autocorrelation assumption

This assumption states that the covariance between the errors term overtime or cross-sectionally is zero or simply errors are uncorrelated with one another. But if the errors are not uncorrelated with one another, they are said to be auto correlated or that they are “serially correlated”. (Brooks 2008)

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 figure 4.1 below.

Figure 4.1 Rejection and Non-Rejection Regions for DW Test



The study used the dL and dU values for 180 observations.

As per the Durbin-Watson test (DW) table for 180 observations with 5 explanatory variables at 1% level of significance, the dL and dU values are 1.44 and 1.65, respectively. The DW values for model and for 180 observations were 1.841794. The relevant critical values for the test are  $dL = 1.44$ ,  $dU = 1.65$ , and  $4 - dU = 4 - 1.65 = 2.35$ ;  $4 - dL = 4 - 1.44 = 2.56$ . Accordingly, Durbin-Watson test value is clearly between 1.44 and 2.35 which is 1.841794 and the DW value is lies in the non-rejection region, where as the null hypothesis do not reject. The Durbin Watson test is an indication of the absence of autocorrelation. Therefore, the Durbin Watson test of 1.841794 shows the absence of auto-correlation problem in the model.

Figure 4.1 DW test result

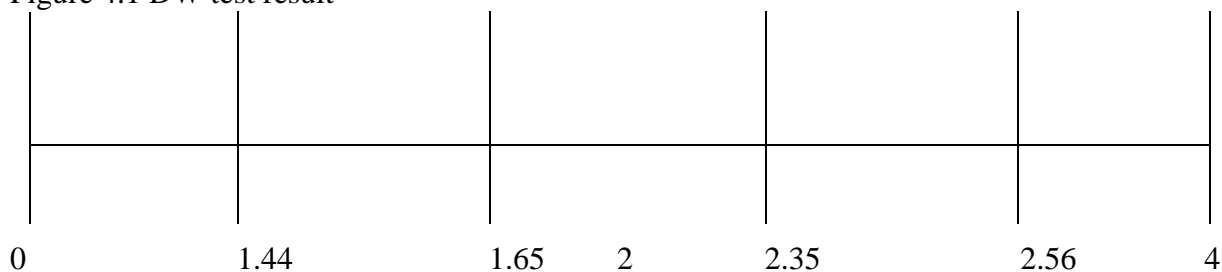


Table 4.3 DW test result test of autocorrelation

Test	Test statistics
DW result	1.841794

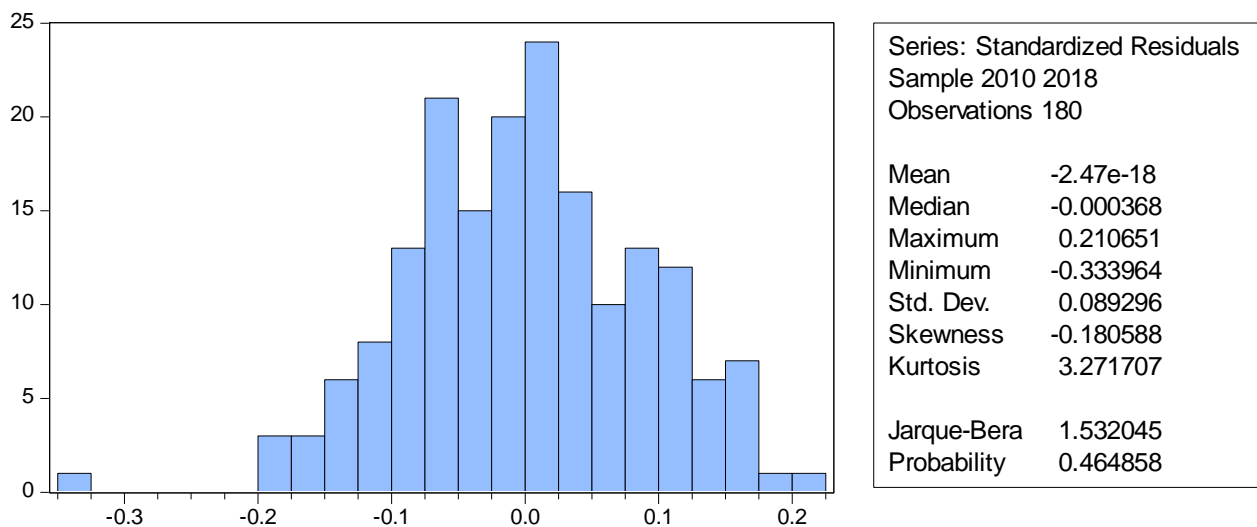
### 4.3.2. Normality

Normality, the most fundamental assumption in data analysis, refers to the shape of data distribution for an individual metric variable. Normality is tested using graphical and statistical tests.

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). In case of this study, the researcher used Bera-Jarque test to check normality assumptions.

As shown in the graph 4.2 below kurtosis approaches to 3 (i.e. 3.271707), and the Bera-Jarque statistic p-value was not significant even at 5% significance level as per the P values shown in the histogram below, has a P-value of 0.464858. 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.

Figure 4.3: Graphical Test of Normality Using Histogram



Source; Computed from Eviews result

### 4.3.3. Multicollinearity

Multicollinearity problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as Multicollinearity. There are two classes of Multicollinearity: perfect Multicollinearity and near Multicollinearity. Perfect Multicollinearity occurs when there is an exact relationship between two or more variables. In this case, it is not possible to estimate all of the coefficients in the model. Perfect Multicollinearity will usually be observed only when the same explanatory variable is inadvertently used twice in a regression. Whereas, near Multicollinearity is much more likely to occur in practice, and would arise when there was a non-negligible, but not perfect, relationship between two or more of the explanatory variables.

In order to examine the possible degree of Multicollinearity among the explanatory variables, and to test the independence of the explanatory variables or to detect any Multicollinearity problem in regression model the study used a correlation matrix of independent variables.

As it is shown in Table 4.6 below, there is no strong correlation between the explanatory variables (TDTAR, TDTER, LTDTAR, ICR and FSIZE). As noted by Gujarati, (2003), Hair et al. (2006) and Pallant (2005) cited on Mohammed G. (2014), inter-correlation among independent variables is above from 0.9, causes serious Multicollinearity problem but correlation coefficient below 0.9 not cause serious Multicollinearity problem.

But, the first test for Multicollinearity as indicated in the Annex shows the existence of Multicollinearity correlation between the independent variables total debt to asset ratio (TDTAR), total debt to equity ratio (TDTER), long term debt to asset ratio (DTER) and interest coverage ratio (ICR) used to represent the MFIs capital structure. After including the correlated variable, Multicollinearity test was made for the independent variables.

The result of the final test for Multicollinearity of this study is presented in Table 4.4 below, so that no Multicollinearity problem among existing explanatory variables shown

Table 4. 4 Correlation Matrix between Explanatory Variables

	TDTAR	TDTER	LTDATAR	ICR	FSIZE
TDTAR	1				
TDTER	0.311356	1			
LTDATAR	0.150083	0.055166	1		
ICR	0.045179	-0.010884	0.140561	1	
FSIZE	0.319936	0.280091	0.180657	0.353330	1

Source; Computed from Eviews result

#### 4.4. Model Selection; Fixed Effect versus Random Effect Models

As noted in Brooks (2008), there are two panel data estimator approaches that can be employed in financial research: fixed effects model and random effects model. For choosing the best way for data analysis running the Housman test distinguishes the appropriate model. The Hausman test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results (Li Yuqi, 2007).

According to Brooks (2008), if the p-value for Hausman test is less than 5%, this shows the fixed effects model is appropriate than random effects model. Otherwise the random effect model is selected. According to Table 4.5 below, the Housman specification tests shows that the model has a p value of (0.0519). This indicates that the random effect model is preferred. Therefore, in this study random effect model was used to test the impact of capital structure on MFIs profitability.

The result from Housman test in table allow as to not reject the null hypothesis that random model is better in this regression analysis. This implies that a random effect model is more appropriate than fixed effect model to undertake the panel regression estimation for this study.

Table 4.5 Hausman test

Correlated Random Effects - Hausman Test  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.974483	5	0.0519

#### 4.5. Regression Analysis Results

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

$$ROA_{i,t} = \alpha + \beta_1 (TDTAR)_{i,t} + \beta_2 (TDTER)_{i,t} + \beta_3 (ICR)_{i,t} + \beta_4 (LTDTAR)_{i,t} + \beta_5 (FSIZE)_{i,t} + \varepsilon_{i,t}$$

Where:

TDTAR = total debt to asset ratio

TDTER = total debt to equity ratio

ICR = interest coverage ratio

LTDTAR = long term debt to asset ratio

FSIZE = firm

$\varepsilon$  = error term

Under the following random effect regression output the beta coefficient shows positive and negative values. Beta coefficient indicates the level of influence of independent variables over dependent variable. The P-value indicates at what percentage or precession level of each variable is significant. R-square values indicate the explanatory power of the independent variables over dependent variable. Therefore, the next part discusses the output of random effect model in detail.

As the below table 4.5 shows, the random effect panel data regression model was implemented to identify the relationship between the dependent variable and the independent variables.

Table 4.6 Results of the fixed effect panel data regression analysis

Dependent Variable: ROA  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 12/29/20 Time: 12:12  
 Sample: 2010 2018  
 Periods included: 9  
 Cross-sections included: 20  
 Total panel (balanced) observations: 180  
 Swamy and Arora estimator of component variances

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	-0.064859	0.060790	-1.066939	0.2875
TDTAR	-0.299973	0.038033	-7.887253	0.0000
TDTER	0.007779	0.002290	3.397714	0.0008
LTD TAR	0.143847	0.057061	2.520960	0.0126
ICR	0.009283	0.000322	28.82242	0.0000
FSIZE	0.054978	0.011837	4.644642	0.0000

Effects Specification		S.D.	Rho
Cross-section random		0.059431	0.4361
Idiosyncratic random		0.067587	0.5639

Weighted Statistics			
R-squared	0.858335	Mean dependent var	0.019949
Adjusted R-squared	0.854264	S.D. dependent var	0.180057
S.E. of regression	0.068737	Sum squared resid	0.822119
F-statistic	210.8495	Durbin-Watson stat	1.841794
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.881137	Mean dependent var	0.056280
Sum squared resid	1.562682	Durbin-Watson stat	0.967203

The random effect regression result shown in the table 4.5 above, the R-squared of 0.858335 and Adjusted R-squared of 0.854264, which indicates that the independent variables that were used in

this study explains 85.83 percent of the dependent variable. The remaining 14.17% is influenced by other factors that are not included in this study. Meaning that, other factors that are not studied in this research affects 14.17 percent of MFIs profitability, which is giving room for further research to investigate the other factors.

As the above table 4.5 presents, total debt to asset ratio had a negative and statistically significant influence on MFIs financial performance (profitability), total debt to equity ratio, long term debt to asset ratio, interest coverage ratio and Fsize had a positive and statistically significant influence on MSIs financial performance (profitability). However the coefficient sign all variable except TDTAR should be positive from my expectation.

The above table also depicts that, TDTAR, TDTER, ICR and Fsize had statistically significant influence on Ethiopian MFIs financial performance (profitability) at 1% significant level and LTDTAR has statistically significant influence on Ethiopia MFIs financial performance (profitability) at 5% significant level.

## **4.6. Discussion on Regression Results**

The preceding section presents the overall results of the study, and this section discusses the general result of each explanatory variables based on random effect regression results indicated in the table 4.5 above.

### **4.6.1. Total Debt to Asset Ratio**

The results of random effect model in table 4.5 indicated that debt to total asset ratio had a positive relationship with profitability, and statistically significant (p-value = 0.0000) at 1percent significant level. Thus, the result was not in accordance with the expected sign. This implies that every one percent change (increase or decrease) in MFIs debt to asset ratio keeping other things constant had a resultant change of 29.99 percent on the profitability in the opposite direction. This result also shows that, the level of external financing in Ethiopian MFIs decrease the level of profit also increase. Besides, the result revealed the profitable MFIs have better access to external

financing but in this result indicate the context profitable MFIs have better access to internal financing.

The result of this study indicates a negative relationship between debt to asset ratio and MFIs profitability based on tax considerations. The findings were consistent with the trade-off theory. In addition, negative relationship between debt to asset ratio and profitability was observed in following empirical studies, such as (Bourke 1989), (Berger and Bonaccorsi 2006), (Margrate and psillaki 2007), (Kebewar 2012) and (Khalid et al 2013) were some of them.

#### **4.6.2. Total Debt to Equity ratio**

The result of random effect model table 4.5 indicated that Total Debt to equity had positive relationship with profitability with strongly statistically significant (p-value = 0.0008) at 1% level. And it was in accordance with the expected sign. This implies that every 1 birr change (increase or decrease) in MFIs deposit to asset ratio keeping other things constant had a resultant change of 7.78cents (Coeff. = 0.07779) on the profitability in the same direction. This result also shows that financing with total debt to equity have a positive impact on profitability of MFIs in Ethiopia.

The result of this study indicates a positive relationship between debt to Equity ratio and MFIs profitability based on tax considerations. The findings were consistent with the trade-off theory. In addition, positive relationship between debt to asset ratio and profitability was observed in following empirical studies, such as (Bourke 1989), (Berger and Bonaccorsi 2006), (Margrate and psillaki 2007), (Kebewar 2012) and (Khalid et al 2013) were some of them.

#### **4.6.3. Interest Coverage Ratio**

The results of random effect model in table 4 .5 shows that the relationship between interest coverage ratio and profitability was, statistically significant wit p-value = 0.0000, and it was in accordance with the expected sign.

Furthermore, the result implies that every one percent change (increase or decrease) in the MFIs interest coverage ratio keeping other things constant had a resultant change of 0.93 percent increase

interest expense payments on its debt with its EBIT. On the other hand, the positive relationship indicates the MFIs in Ethiopia borrow the fund by low cost.

Even though this finding shows significant relationship between interest coverage ratio and profitability, it is consistent with various previous research findings like, (Khalid et al 2013), (Enugu and Amorji 2014) and (Enekwe, et al 2014) are some of them.

#### 4.6.4. Long term debt to asset ratio

The result of random effect model table 4.5 indicated that long term debt to asset ratio had positive relationship with profitability (return on asset) and statistically significant with p -value = 0.0126 at 5% level, and it was in accordance with the expected sign. This implies that every 5 percent change (increase or decrease) in MFIs long term debt to asset ratio keeping other things constant had a resultant change of 14.38 percent on the profitability (return on asset) in the same direction.

This result also shows that an increase in percentage of long term debt financing has a positive impact on profitability of Ethiopian microfinance industry. The result was consistent with previous empirical findings of, (Eltabakh et al., 2014), Kwast & Rose (1982), Vasiliou (1996), Hester & Zoellner (1966) and Asiri (2007)

Table 4.7 The Summary of expected and actual signs of explanatory variables

Explanatory Variables	Expected Impact on Profitability	Explained Variable (ROE) Profitability
Total Debt to Asset Ratio (TDTAR)	Positive and Significant	Negative and Significant
Total Debt to Equity Ratio (TDER)	Positive and Significant	Positive and significant
Interest Coverage Ratio (ICR)	Positive and Significant	Positive and Significant
Firm (Asset) Size (FSIZE)	Positive and Significant	Positive and Significant
Long Term Debt to Asset Ratio (LTDAR)	Positive and Significant	Positive and Significant



## **CHAPTER FIVE**

### **Conclusion and Recommendations**

The preceding chapter presented the results and discussion, while this chapter deals with the conclusion and recommendation based on the findings of the study. Accordingly, this chapter is organized into two sub-sections. The first section presents the conclusions and second presents the recommendations.

#### **5.1. Conclusion**

The previous chapter presented the results and finding of the study while this chapter discusses about conclusions and recommendations based on the results and findings. Accordingly this chapter is organized into two sub-sections. Section 5.1 presents the conclusions and section 5.2 presents the recommendations.

The main objective of this study was to examine the impact of capital structure on financial performance (profitability) of microfinance institutions in Ethiopia and additionally the relationships between other five explanatory variables and profitability of MFIs in Ethiopian. To achieve the intended objectives the study used quantitative approaches panel data analysis methodology. The panel data were collected from audited financial statements particularly balance sheets and income statements of a sampled thirty MFIs over the time period from 2010 2018. The collected data were analyzed through a random effect model using statistical package ‘eview’.

In order to conduct the empirical analysis, one dependent variable and selected from prominent previous research works on the impact of capital structure on profitability of various industries through giving emphasis on finance sector specially microfinance sector. Return on Asset as a measure of profitability of MFIs were dependent variable, while the independent variables were total debt to asset ratio, total debt to Equity ratio, long term debt to Asset ratio and interest coverage ratio.

The results of the random effect estimation model showed the existence of the following relationship between profitability and Capital structure as measured by total debt to asset ratio had statistically significant negative relationship with profitability, which was in not line with prior expectation. This result also supports the tradeoff theory and prefers of using less borrowed funds to raise their assets so that to maximize their financial return, the other variable total debt to equity ratio had statistically significant and positive relationship with profitability, which was also in line with prior expectation, long term debt to asset ratio had also a positive and statistically significant relationship with profitability, which was also in line the expected sign. Furthermore, the impact of other variable on profitability of MFIs in this study, the result shows that as there was positive and statistically significant relationship between interest coverage ratio and profitability.

the results of the study indicated that the size of MFIs calculated as logarithm of total asset, had statistically significant and positive relationship with profitability which was also in line the expected sign, even though it was consistent with some prior empirical evidences, some evidences shows positive and some of them shows no relationship with profitability of firms.

In conclusion, the finding of the study suggests that capital structure had significant impact on profitability of microfinance institutions in Ethiopia. And implies managers need to consider this impact in their financing or capital structure decision. The managers are should be applied and implements more concerned on the TDTER, LTDTAR and ICR for the effective and optimal profitability because the result and conclude shows they are positives and significant effects on the profitability. When to increase these capital structures and managed properly the profitability also proportional to them.

## **5.2. Recommendations**

Based on the findings obtained from the result of the study, the research forwards these recommendations;

- ❖ Ethiopian microfinance institution should have profitability management policies to ensure that they are operating to satisfy their profitability target as well as the ability of meeting the financial demands of their costumers by maintaining optimal level of profitability.

- ❖ In this study microfinance institutions in Ethiopia are employing more debt than equity in their capital structures, which are significant positive impact on their financial performance (profitability). This indicates that increasing debt financing in their capital structure make the profitability of the microfinance institutions to increase accordingly.
- ❖ In general, the finding of the study reveals that, MFIs specific variables have more statistical significant impact on the impact of profitability of Ethiopian MFIs; since they are internal variables that can be controlled by management. Special emphasis shall be given to those significant var

## REFERENCE

- Abor, J. (2005). “*The effect of capital structure on profitability: empirical analysis of listed firms in Ghana*”, *Journal of Risk Finance*, vol.6, pp. 438-455.
- Abbadi, S. M., & Abu-Rub, N. (2012, January). The Effect of Capital Structure on the
- Aloy N. (2012), *Capital Structure and Profitability in Srilankan Banks: Journal of Management and Business Research*, Volume 12, ISSN: 2249-4588.
- Amdemikael, A. (2012). *Factors Affecting Profitability: An Empirical Study on Ethiopian*
- Ashenafi, B. (2005). *Determinants of capital structure in medium enterprises in Ethiopia. Banking Industry*. Addis Ababa University, Accounting & Finance. Addis Ababa: Addis Ababa University.
- Belayneh, H. (2011). *Determinants of Commercial Banks profitability of Ethiopian*
- Berger, A. and Bonaccorsi di Patti, E., (2006). *Capital structure and firm performance: a Commercial banks*, Msc thesis, School of Business and Public Administration, Addis Ababa University.
- Creswell, JW (2003). *Research design: qualitative, quantitative and mixed methods approaches*, 2nd end, Sage Publications, California.
- Creswell, JW (2009), *Research design: quantitative, qualitative and mixed methods approaches*, 3rd end, Sage Publications, California.
- In Kenya” The Degree of Masters of Business Administration Of The University Of Nairobi
- Kibrom M. (2010), *the Determinants of Capital Structure: Evidence from Commercial Banks in Ethiopia*: Msc thesis, College of Business and Economics, Mekelle University
- Kyereboah-Coleman, A. (2007). *The impact of capital structure on the performance of microfinance institutions. Journal of Risk Finance (Emerald Group Publishing Limited)*, 8(1), 56-71.

- Li, Y (2007), *Determinants of Banks' Profitability and Its Implication on Risk Management Practices*, Panel Evidence from the UK, the University of Nottingham.
- Linus M. (2013) *The Effect of Debt Financing On Firm Profitability of Commercial Banks* Master's thesis, Addis Ababa University.
- Modigliani, F. and M. Milliner, (1958), *the Cost of Capital, Corporation Finance and the*
- Modigliani, F. and M. Milliner, (1963). *Corporate Income Taxes and the Cost of Capital*. A Correction, American Economic Review,
- Mohammed G. (2014). *Determinants of capital structure and its impact on the performance of Ethiopian insurance industry*: MSc thesis, College of Business and Economics, Jimma University.
- Molyneux, P. and Thornton, J. (1992). *Determinants of European Bank Profitability: A Note*, *Journal of Banking and Finance*, 16, 6, 1173-1178.
- Morduch, J., and Haley, B. (2002). *Analysis of Effects of Microfinance on Poverty Reduction*. NYU Wagner Working Paper, No. 1014, Issued June 2002, pp. 84-97.
- New approach to testing agency theory and an application to the banking industry", *Journal of Banking and Finance*, 30, pp, 1065-102.
- Performance of Palestinian Financial Institutions. *British Journal of Economics, Finance and Management Sciences*, 3(2), 92-101.
- Ross, S. (1977). *The Determination of Financial Structure: The Incentive Signaling Approach*", *Bell Journal of Economics*, Vol. 8, No. 1, pp. 23-40.
- Theory of Investments* American Economic Review
- Weldemikael, S. (2012). *Determinants of Capital Structure of Commercial Banks in Ethiopia* Addis Ababa University.

Zeitun, R and Tian, G.G (2007). *Capital structure and corporate performance: evidence from Journal of Finance 39(3), (December): 575-92.*

## Appendix

### Appendix I- Excel Result

YEAR	COMPANY ID	ROA	TDTAR	TDTER	ICR	LTD TAR	FSIZE
2010	1	0.0329	0.3517	0.5424	2.8151	0.0731	5.7237
2011	1	0.0293	0.5090	1.0367	1.9044	0.0000	5.8836
2012	1	0.0304	0.6178	1.6164	1.9064	0.0759	6.0836
2013	1	0.0773	0.5939	1.4627	3.3410	0.0000	6.1831
2014	1	0.0808	0.6180	1.6178	3.1046	0.0293	6.3403
2015	1	0.0972	0.6155	1.6007	2.6480	0.0274	6.4355
2016	1	0.1388	0.6082	1.5521	4.6009	0.0241	6.4787
2017	1	0.1656	0.6685	2.0166	5.9917	0.0279	6.5471
2018	1	0.1881	0.6505	1.8616	7.4045	0.0986	6.5972
2010	2	0.3459	0.5055	1.0223	42.2345	0.0085	4.7791
2011	2	0.3554	0.4738	0.9003	44.0524	0.0241	4.9222
2012	2	0.3395	0.5350	1.1507	38.0648	0.2757	5.0939
2013	2	0.3467	0.6078	1.5494	33.6971	0.3409	5.2810
2014	2	0.2312	0.6289	1.6946	5.8105	0.3954	5.4176
2015	2	0.2374	0.6440	1.8092	7.7652	0.3764	5.5292
2016	2	0.0547	0.5883	1.4291	1.6411	0.2116	5.5431
2017	2	0.0681	0.5741	1.3480	6.7878	0.1864	5.6040
2018	2	0.0479	0.6511	1.8661	3.8826	0.2585	5.7548
2010	3	-0.0014	0.4483	0.8127	-0.0530	0.0000	3.2131
2011	3	-0.2158	0.4939	0.9760	-14.3486	0.0000	2.9913
2012	3	-0.2997	0.4536	0.8300	-25.9725	0.0000	2.8966
2013	3	-0.4782	0.5430	1.1880	-38.7296	0.0000	2.7990
2014	3	-0.5273	0.5513	1.2287	-47.9508	0.0000	2.9116
2015	3	-0.1923	0.7033	2.3699	-5.6745	0.0000	2.7962
2016	3	-0.7544	0.1072	0.1201	-100.2482	0.0000	3.4929
2017	3	-0.9162	0.6993	2.3260	-72.2778	0.0000	3.2669
2018	3	-1.0780	0.4920	0.9684	-94.1888	0.0000	3.3977
2010	4	-0.0240	0.5969	1.4809	-6.4875	0.0000	3.3342
2011	4	0.0095	0.5384	1.1663	1.1676	0.0000	3.3568

2012	4	-0.2018	0.7053	2.3928	-9.1858	0.0000	3.0791
2013	4	-0.3214	0.6502	1.8577	-19.6866	0.0000	3.0155
2014	4	-0.5105	1.1049	-10.5326	-14.4399	0.0000	2.9730
2015	4	-0.1634	0.1402	0.1630	-19.4454	0.0000	3.9820
2016	4	0.2354	0.2495	0.3325	26.7086	0.0000	4.2734
2017	4	0.1216	0.2233	0.2875	13.9381	0.0000	4.5405
2018	4	0.1020	0.2679	0.3659	13.9381	0.0000	4.7292
2010	5	0.0708	0.3455	0.5279	1.4691	0.1602	4.6557
2011	5	0.0665	0.3608	0.5645	1.4374	0.1569	4.6647
2012	5	0.1239	0.3816	0.6171	3.0370	0.1318	4.7404
2013	5	0.1423	0.4557	0.8374	4.9671	0.1044	4.8170
2014	5	0.1660	0.5138	1.0566	5.5885	0.0949	4.8211
2015	5	0.1932	0.4801	0.9233	5.9064	0.0652	4.7808
2016	5	0.1014	0.6454	1.8203	2.4706	0.2122	4.7573
2017	5	0.0774	0.6599	1.9406	1.9093	0.2520	4.7633
2018	5	0.0586	0.6537	1.8880	1.0772	0.2010	4.7554
2010	6	0.0159	0.5848	1.4085	0.5837	0.0000	4.2607
2011	6	0.0732	0.5719	1.3358	2.7953	0.0000	4.3210
2012	6	0.0089	0.6058	1.5368	0.6986	0.0000	4.3666
2013	6	0.0054	0.6642	1.9778	2.6105	0.0000	4.4455
2014	6	-0.0073	0.7059	2.4004	-0.2246	0.0000	4.5123
2015	6	0.0316	0.7182	2.5489	0.8269	0.0000	4.5892
2016	6	0.0523	0.7056	2.3970	2.4257	0.1609	4.6520
2017	6	0.0373	0.6949	2.2772	1.8507	0.1282	4.7187
2018	6	0.0288	0.7099	2.4470	0.6210	0.1457	4.7869
2010	7	0.0079	0.2319	0.3019	0.9268	0.0000	4.2590
2011	7	0.1161	0.4818	0.9299	8.6715	0.0265	4.4779
2012	7	0.0062	0.6686	2.0171	0.2083	0.2807	4.7118
2013	7	0.0078	0.6896	2.2213	0.1805	0.3165	4.7862
2014	7	0.0093	0.6552	1.8999	0.2351	0.2575	4.7991
2015	7	-0.0793	0.6208	1.6369	-2.8222	0.2609	4.8378
2016	7	0.0049	0.7009	2.3437	0.1522	0.0000	4.9449
2017	7	0.0077	0.7776	3.4970	0.2942	0.0000	5.1149
2018	7	0.0279	0.8061	4.1581	0.6042	0.4804	5.2606
2010	8	-0.5834	0.4982	0.9927	-64.0497	0.0000	4.2599
2011	8	-0.1921	0.6615	1.9546	-30.0320	0.0000	4.4370

2012	8	-0.9651	0.7609	3.1831	-59.5188	0.0334	4.6526
2013	8	-0.1464	0.7862	3.6781	-29.4869	0.0419	4.7302
2014	8	-0.0083	0.8044	4.1131	-1.1608	0.0480	4.7961
2015	8	0.0071	0.8206	4.5737	5.0759	0.0404	4.8711
2016	8	-0.0998	0.8657	6.4469	-24.4527	0.0384	4.8922
2017	8	0.0140	0.7487	2.9797	13.6253	0.0000	4.9655
2018	8	0.0270	0.7904	3.7709	18.2902	0.0000	5.0811
2010	9	0.1480	0.2839	0.3965	3.6541	0.1051	4.1241
2011	9	0.1895	0.3500	0.5385	5.3865	0.0901	4.1911
2012	9	0.2265	0.3546	0.5494	6.7658	0.0596	4.1931
2013	9	0.2418	0.3294	0.4912	9.9033	0.0000	4.3031
2014	9	0.1964	0.3147	0.4593	6.0243	0.0359	4.4092
2015	9	0.2515	0.3141	0.4578	8.0258	0.0259	4.4549
2016	9	0.2719	0.2830	0.3948	6.4488	0.0000	4.5473
2017	9	0.0905	0.2760	0.3812	2.5914	0.0000	4.5478
2018	9	0.1070	0.3448	0.5263	2.4474	0.0799	4.7768
2010	10	-0.6629	0.2868	0.4020	-79.1571	0.0000	2.9222
2011	10	-0.5799	0.6030	1.5191	-44.1908	0.0000	2.9913
2012	10	-0.3830	0.9477	18.0957	-15.0349	0.0000	3.1388
2013	10	-0.4249	0.7907	3.7782	-12.6421	0.0000	3.0658
2014	10	-0.3484	0.3041	0.4370	-18.3027	0.0000	3.1917
2015	10	-0.7424	0.8309	4.9146	-61.6739	0.0000	3.2503
2016	10	-0.0033	0.5472	1.2087	-0.0767	0.0000	4.4354
2017	10	-0.4327	0.1731	0.2094	-41.2018	0.0000	3.8021
2018	10	-0.0703	0.7892	3.7438	-8.6658	0.0000	4.5054
2010	11	0.8014	0.2771	0.3833	82.5200	0.0000	3.6145
2011	11	0.6802	0.3413	0.5181	48.8177	0.0000	3.8041
2012	11	0.3558	0.6080	1.5509	21.8168	0.0899	4.1405
2013	11	0.5949	0.6643	1.9793	65.6689	0.0000	4.2325
2014	11	0.5404	0.5644	1.2955	35.3172	0.0000	4.2094
2015	11	0.3229	0.5054	1.0219	17.6586	0.2654	4.1141
2016	11	0.2700	0.5725	1.3391	8.5150	0.3076	4.0501
2017	11	0.1049	0.6944	2.2718	2.5122	0.3920	3.9448
2018	11	-0.3901	1.0550	- 19.1973	-6.1577	0.0000	3.7223
2010	12	0.1292	0.7738	3.4216	5.0009	0.0000	4.3935
2011	12	0.1860	0.7243	2.6269	5.2610	0.0000	4.4419

2012	12	0.0947	0.6648	1.9830	3.3420	0.0000	4.5115
2013	12	0.2879	0.6563	1.9099	12.2007	0.0000	4.6509
2014	12	0.3305	0.6166	1.6084	12.6594	0.1256	4.7351
2015	12	0.3514	0.5888	1.4320	14.5373	0.2136	4.8056
2016	12	0.3637	0.5834	1.4004	14.6158	0.0000	4.8807
2017	12	0.3005	0.5771	1.3644	12.8550	0.2276	4.9644
2018	12	0.2729	0.5770	1.3641	9.7430	0.0307	5.0909
2010	13	-0.3233	0.2107	0.2670	-61.7789	0.0000	4.2113
2011	13	-0.2053	0.1979	0.2467	-27.0957	0.0000	4.2365
2012	13	-0.1490	0.3877	0.6333	-18.3720	0.0000	4.3594
2013	13	-0.0180	0.5321	1.1370	-1.8704	0.0000	4.6331
2014	13	0.0618	0.3502	0.5390	6.2904	0.0186	4.8102
2015	13	0.0956	0.4908	0.9638	3.4569	0.0103	5.0681
2016	13	0.1187	0.4991	0.9965	3.8270	0.0075	5.2065
2017	13	0.1729	0.4961	0.9846	10.3636	0.0069	5.2412
2018	13	0.1931	0.5196	1.0816	14.0816	0.0307	5.3637
2010	14	0.1000	0.7584	3.1397	3.6895	0.0000	6.1428
2011	14	0.1306	0.7366	2.7965	3.9332	0.0000	6.2281
2012	14	0.1503	0.7288	2.6875	5.0630	0.0000	6.3251
2013	14	0.1471	0.7492	2.9879	5.5874	0.0000	6.4627
2014	14	0.1286	0.8044	4.1124	5.3616	0.0000	6.6596
2015	14	0.1842	0.7448	2.9188	5.1358	0.0000	6.6742
2016	14	0.0549	0.7068	2.4105	1.9372	0.0000	6.7131
2017	14	0.1775	0.7806	3.5579	9.3385	0.0528	6.9359
2018	14	0.1665	0.8040	4.1023	8.6518	0.0476	7.0892
2010	15	0.0000	0.7266	2.6579	0.0007	0.3117	5.8015
2011	15	0.0081	0.7553	3.0867	0.2831	0.2617	5.8675
2012	15	0.0078	0.8219	4.6151	0.5995	0.1032	6.1221
2013	15	0.0270	0.8279	4.8098	1.5952	0.0838	6.2700
2014	15	0.0242	0.8537	5.8350	1.7014	0.0766	6.4331
2015	15	0.0298	0.8541	5.8524	2.0284	0.0594	6.5542
2016	15	0.0249	0.8844	7.6469	1.7810	0.0535	6.6331
2017	15	0.0213	0.9224	11.8850	1.6816	0.0367	6.7630
2018	15	0.0177	0.8936	8.3959	0.9877	0.0209	6.9359
2010	16	0.2363	0.6294	1.6980	11.3930	0.0000	4.7240
2011	16	0.3042	0.5621	1.2837	15.9092	0.0000	4.7549
2012	16	0.3317	0.5483	1.2140	17.7301	0.0000	4.8089

2013	16	0.3047	0.5761	1.3591	16.5603	0.0000	4.9233
2014	16	0.3120	0.5636	1.2916	15.9383	0.0000	4.9831
2015	16	0.3237	0.5641	1.2939	15.7534	0.0000	5.0225
2016	16	0.2232	0.5600	1.2729	8.0677	0.0000	5.0619
2017	16	0.2440	0.5733	1.3438	9.2654	0.1259	5.1364
2018	16	0.2070	0.6664	1.9973	5.4907	0.2454	5.2954
2010	17	0.4119	0.5519	1.2314	34.9542	0.0048	4.7879
2011	17	0.3468	0.5385	1.1669	16.6204	0.0051	4.8444
2012	17	0.3431	0.5733	1.3435	12.5229	0.0000	4.9683
2013	17	0.2336	0.6399	1.7772	9.5092	0.0000	5.1492
2014	17	0.2694	0.6153	1.5995	10.4844	0.0000	5.2158
2015	17	0.2255	0.6638	1.9742	9.7718	0.0000	5.3502
2016	17	0.3228	0.6576	1.9208	8.3156	0.3479	5.3997
2017	17	0.3323	0.6595	1.9366	8.3308	0.3354	5.4633
2018	17	0.0364	0.6757	2.0833	0.8035	0.3449	5.5366
2010	18	0.0060	0.6894	2.2195	0.2177	0.0000	4.5615
2011	18	0.0187	0.7151	2.5095	0.5305	0.0000	4.6855
2012	18	0.0441	0.7357	2.7837	1.5496	0.0000	4.7974
2013	18	0.0344	0.7984	3.9612	1.2798	0.0000	5.0093
2014	18	0.0507	0.6685	2.0168	1.6153	0.0000	5.0794
2015	18	0.0476	0.6603	1.9436	1.5705	0.0000	5.1342
2016	18	0.0481	0.7049	2.3889	2.8041	0.0000	5.2725
2017	18	0.0703	0.6712	2.0415	2.3047	0.0000	5.3603
2018	18	0.0697	0.6471	1.8336	2.4898	0.0000	5.4953
2010	19	-0.0230	0.5278	1.1176	-1.2562	0.0000	5.0814
2011	19	-0.0456	0.5191	1.0794	-2.2705	0.0000	5.1422
2012	19	-0.0120	0.5235	1.0984	-0.8044	0.0000	5.4052
2013	19	0.0548	0.5152	1.0627	3.0184	0.0000	5.5837
2014	19	0.0839	0.4799	0.9225	3.6890	0.0000	5.6391
2015	19	0.1460	0.4548	0.8342	6.2503	0.0000	5.6974
2016	19	0.2098	0.4635	0.8639	11.1760	0.0111	5.7887
2017	19	0.2540	0.4874	0.9507	13.4617	0.0132	5.8901
2018	19	0.2292	0.6033	1.5206	9.7680	0.0139	6.0787
2010	20	0.1671	0.6863	2.1878	9.7175	0.0772	4.9785
2011	20	0.1886	0.6533	1.8847	5.9666	0.0677	5.1060
2012	20	0.2004	0.6747	1.4104	6.9472	0.4145	5.2832
2013	20	0.2172	0.6822	2.1464	5.3338	0.3809	5.3781

2014	20	0.2071	0.7034	2.3718	4.4974	0.0000	5.4904
2015	20	0.1696	0.7652	3.2591	4.8298	0.0000	5.6655
2016	20	0.1699	0.7714	3.3743	3.9370	0.3406	5.7448
2017	20	0.2063	0.7310	2.7173	4.0502	0.2399	5.7387
2018	20	0.2306	0.7067	2.4092	4.9059	0.1862	5.7522

## Appendix II- Regression Result

Dependent Variable: ROA

Method: Panel EGLS (Cross-section random effects)

Date: 12/29/20 Time: 12:12

Sample: 2010 2018

Periods included: 9

Cross-sections included: 20

Total panel (balanced) observations: 180

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.064859	0.060790	-1.066939	0.2875
TDTAR	-0.299973	0.038033	-7.887253	0.0000
TDTER	0.007779	0.002290	3.397714	0.0008
LTDTAR	0.143847	0.057061	2.520960	0.0126
ICR	0.009283	0.000322	28.82242	0.0000
FSIZE	0.054978	0.011837	4.644642	0.0000

### Effects Specification

	S.D.	Rho
Cross-section random	0.059431	0.4361
Idiosyncratic random	0.067587	0.5639

### Weighted Statistics

R-squared	0.858335	Mean dependent var	0.019949
Adjusted R-squared	0.854264	S.D. dependent var	0.180057
S.E. of regression	0.068737	Sum squared resid	0.822119
F-statistic	210.8495	Durbin-Watson stat	1.841794
Prob(F-statistic)	0.000000		

### Unweighted Statistics

R-squared	0.881137	Mean dependent var	0.056280
Sum squared resid	1.562682	Durbin-Watson stat	0.967203

### Appendix III- Hausman test result

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.974483	5	0.0519

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
TDTAR	-0.294204	-0.299973	0.000139	0.6252
TDTER	0.009278	0.007779	0.000000	0.0136
LTD TAR	0.111067	0.143847	0.000392	0.0977
ICR	0.008871	0.009283	0.000000	0.0017
FSIZE	0.060760	0.054978	0.000128	0.6089

Cross-section random effects test equation:

Dependent Variable: ROA

Method: Panel Least Squares

Date: 04/30/20 Time: 06:41

Sample: 2010 2018

Periods included: 9

Cross-sections included: 20

Total panel (balanced) observations: 180

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.096727	0.082718	-1.169361	0.2441
TDTAR	-0.294204	0.039824	-7.387667	0.0000
TDTER	0.009278	0.002369	3.916846	0.0001
LTD TAR	0.111067	0.060396	1.838971	0.0678
ICR	0.008871	0.000348	25.49521	0.0000
FSIZE	0.060760	0.016364	3.713112	0.0003

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.946145	Mean dependent var	0.056280
Adjusted R-squared	0.937806	S.D. dependent var	0.271011
S.E. of regression	0.067587	Akaike info criterion	-2.422562
Sum squared resid	0.708036	Schwarz criterion	-1.979096
Log likelihood	243.0306	Hannan-Quinn criter.	-2.242756
F-statistic	113.4614	Durbin-Watson stat	1.984520
Prob(F-statistic)	0.000000		



