



**ST.MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES**

**CAPITAL STRUCTURE AND PROFITABILITY: EVIDENCES FROM PRIVATE  
COMMERCIAL BANKS OF ETHIOPIA**

By

**TIGIST GETA MESFIN**

**JULY, 2018**

**ADDIS ABABA, ETHIOPIA**

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**A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF  
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ST. MARY'S UNIVERSITY  
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## Declaration

I, the under signed, declare that the thesis work entitled “capital structure and profitability: evidences from private commercial banks of Ethiopia” submitted by me under the supervision of Abraham Gebregiorgis for the award of the degree of Master of Business Administration in Accounting and Finance of St,Mary's University at Addis Ababa, Ethiopia, is my original work and it has never been presented in any university. All sources and materials used for this thesis have been duly acknowledged.

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**July, 2018**

## Endorsement

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

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**St. Mary's University, Addis Ababa, Ethiopia**

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Signature

**July,2018**

## TABLE OF CONTENTS

Declaration .....	ii
Endorsement .....	iii
TABLE OF CONTENTS .....	iv
List of Tables .....	vi
List of Figures.....	vii
Acknowledgement .....	viii
List of Abbreviations .....	ix
Abstract .....	xi
1. INTRODUCTION .....	1
1.1. Background of the study.....	1
1.2. Statement of the problem.....	2
1.3. Objective of the study.....	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. Delimitation /Scope of the study .....	5
1.7. Limitation of the study .....	6
1.8. Organization of The Study .....	6
2. LITERATURE REVIEW .....	7
2.1. General Introduction.....	7
2.2. Capital requirements of commercial Banks in Ethiopia.....	7
2.3. Theoretical review .....	7
2.3.1. Overview of Capital structure.....	7
2.3.2. Theories of Capital structure and Profitability/Value of firm.....	8
2.3.2. 1 Modigliani and Miller (MM) theory.....	9
2.3.2. 2 Pecking Order Theory .....	9
2.3.2. 3 Static Trade-off theory.....	10
2.3.2. 4 Agency cost theory .....	11
2.3.2. 5 Signaling theory.....	11
2.3.2.6 Windows of Opportunity .....	12
2.4. Empirical Literature Review on Capital structure and profitability .....	13
2.4.1. Cross Country Studies .....	13
2.4.2 Studies conducted in Ethiopia .....	18

2.4.3 Conceptual framework .....	21
CHAPTER THREE .....	23
3. RESEARCH METHODOLOGY .....	23
3.1. Introduction .....	23
3.2. Research Design .....	23
3.3. Research Approach.....	24
3.4. Study Population .....	25
3.5. Sample and Sampling Techniques.....	25
3.6. Method of Data Collection .....	26
3.7. Method of Data Analysis.....	27
3.8. Model Specification.....	27
3.9. Description of Variables.....	28
3.9.1. Dependent Variable .....	29
3.9.2. Independent Variables .....	30
3.9.3. Control Variables.....	32
3.9.4. Macroeconomic Factor .....	33
3.9.5. Summary of Variables.....	35
4. ANALYSIS AND DISCUSSION .....	36
4.1. Descriptive statistics.....	36
4.2. Correlation Analysis.....	38
4.3. Classical Linear Regression Model (CLRM) Assumptions and Diagnostic Test.....	39
4.3.1. Test for average value of the error term is zero ( $E(u_t) = 0$ ) assumption.....	39
4.3.2. Test for Heteroskedasticity assumption( $\text{var}(u_t) = \sigma^2 < \infty$ ).....	39
4.3.3. Assumption three: covariance between the error terms over time is zero ( $\text{cov}(u_t, u_j) = 0$ ).....	40
4.3.4. Assumption four: normality (errors are normally distributed ( $u_t \sim N(0, \sigma^2)$ )).....	41
4.3.5. Multicollinearity Test .....	43
1 Model Selection (Random Effect versus Fixed Effect Models).....	44
4.4. Discussion of Regression Result .....	48
CHAPTER FIVE.....	52
5. CONCLUSION AND RECCOMENDATION.....	52
5.1 Conclusion.....	52
5.2 Recommendations .....	53
REFERENCES .....	55

## List of Tables

Table 3. 1 Description of variables and their expected sign.....	35
Table 4. 1 Descriptive Statistics of Dependent and Independent Variables.....	36
Table 4. 2 Correlation coefficient among variables.....	38
Table 4. 3 Heteroskedasticity Test for ROA .....	39
Table 4. 4 Heteroskedasticity Test for ROE.....	39
Table 4. 5 Breusch-Godfrey Serial Correlation LM Test: ROA .....	41
Table 4. 6 Breusch-Godfrey Serial Correlation LM Test: ROE.....	41
Table 4. 7 Test for Multicollinearity .....	43
Table 4. 8 Adjusted Multicollinearity result.....	43
Table 4. 9 Test cross-section random effects (ROA) .....	44
Table 4. 10 Test cross-section random effects (ROE).....	44



## List of Figures

Figure 2. 2 Conceptual Framework.....	22
Figure 0-1 Dependent Variable ROA .....	42
Figure 0-2 Dependent Variable ROE .....	42

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## **List of Abbreviations**

ROA	Return on Asset
ROE	Return on Equity
NIM	Net Interest Margin
TDA	Total Debt to Asset Ratio
TDE	Total Debt to Equity Ratio
SIZE	Bank Size
IC	Interest Coverage
TANG	Tangibility
INF	Inflation
EBIT	Earnings Before Interest and Tax
CLRM	Classical Linear Regression Model Capital Adequacy
DW	Durbin-Watson
FA	Fixed Asset
FEM	Fixed Effect Model
OLS	Ordinary Least Square
REM	Random Effect Model
DUM1009:	Dummy Variable for Zemen Bank on 2009
DUM1011:	Dummy Variable for Zemen Bank on 2011
DUM809	Dummy Variable for Lion Bank on 2009
DB:	Dashen Bank
AIB	Awash International Bank
WB	Wegagen Bank
UB	United Bank
NIB	Nib international Bank
BOA	Bank of Abyssinia
LIB	Lion International Bank

COOP Cooperative Bank of Oromiya  
BIB Birhan International Bank  
BUIB Buna International Bank  
ZB Zemen Bank  
OIB Oromiya International Bank  
AIB Addis International Bank  
AB Abay Bank  
EB Enat Bank  
NBE National Bank of Ethiopia  
JB Jarque Bera

## **Abstract**

*The effect of capital structure has been considered to be an important issue on the profitability of private commercial banks. This study empirically examines the effect of capital structure on private commercial banks profitability in Ethiopia and interprets the result. The study used balanced panel model in examining the regression model and collect data from ten private commercial banks covering the period of nine consecutive years, 2009-2017. The study used panel data techniques specifically Random Effect model on the regression analysis and used EView8 software. Before the regression analysis; the researcher test the assumptions of CLRM that are, error of zero mean, normality, heteroscedasticity, autocorrelation and multicollinearity were conducted on the data. The study used two dependent variables ROA and ROE, two independent variables such as total Debt to asset ratio and interest coverage ratio, two control variables size and tangibility and macroeconomic factor inflation. The regression result showed that TDA and TANG have negative and statistically significant effect on ROA at 1% significant level. Whereas; IC, SIZE and INF have positive and statistically significant effect on ROA at 1% ,5% and 1% significant level respectively. In addition, TANG has negative and statistically significant effect on ROE at 1% significant level. While; TDA, IC,SIZE and INF have positive and statistically significant effect on ROE at 1% ,1% ,5% and 5% significant level respectively. The research concluded that capital structure has a significant effect on the profitability of Ethiopian private commercial banks. Finally the recommendations have been forwarded for private banks, management, regulatory body, policy makers and future study on the subject.*

*Key Words : Capital structure, profitability, private commercial banks.*

# CHAPTER ONE

## 1. INTRODUCTION

### 1.1. Background of the study

One of the most important issues in corporate finance is responding “how do firms choose their capital structure?” locating the optimal capital structure has for a long time been a focus of attention in many academic and financial institutions that probes into this area. This is comprehensible as there is a lot of money to be made advising firms on how to improve their capital structure. Defining the optimal capital structure is a critical decision. This decision is important not only because of the impact such a decision has on an organization’s ability to deal with its competitive environment (Nirajini and Priya, 2013).

As ( Ross et.al, 2002) stated capital structure is the mixture of debt and equity maintained by the firm which refers to the specific mixture of long term debt and equity the firm uses to finance its operation.

Capital structure denotes the mode of finance, usually a blend of the loan and equity capital, through which a firm is financed. It has been an interesting issue for many researchers, wherein they attempted to delineate the connection between capital structure and the performance of firms. The decision of how a firm will be financed is subjected to both the managers of the firms and fund suppliers. If financing is done by employing an incorrect combination of debt and equity, a negative effect is seen in the performance and even endurance of a firm. Thus, in order to maximize the firm value, managers need to carefully consider the capital structure decision, which is a complex task, as the use of leverage varies from one firm to another. Therefore, what managers usually do is try to achieve the best combination of debt and equity in their capital structure (Nur et.al, 2017).

Capital structure is the most debatable topic among the scholars and continues keep researchers to investigate. Capital structure decision consists of mix of debt and equity and this is a crucial decision because false decision may lead to financial distress and even to bankruptcy (Shahdila et.al, 2015).

Capital structure and its effect on firm performance is a core issue in finance and there are a number of theories explaining this relationship However, an important noticeable point is that there is no

single theory that can fully interpret the effect of capital structure on firm performance (Phuong and Bich, 2017).

This study, therefore, examines the effect of capital structure on profitability of Ethiopian commercial Banks. The study used panel data econometric analysis based on financial data collected from ten private commercial banks from the year 2009 to 2017.

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

Financial managers have a responsibility of determining the optimal mix of debt and equity that will ensure maximization of shareholders wealth. This has led to the desire to establish whether there is an optimal capital structure that maximizes firm's value. Studies on the impact of capital structure on firm performance have mostly been carried out in developed economies on large and listed firms (Muhammed et.al., 2015).

The issue of capital structure and its impact on firm value has been the subject of remarkable landmark over the past several years in the finance literature. For instance, Modigliani and Miller (1958) irrelevance theory argued that capital structure is unrelated to firm's value. But, in the presence of corporate income tax and the cost of capital Modigliani and Miller (1963) argued that the market value of the firm is positively related to the amount of long term debt used in its capital structure. Moreover, in theoretical models of capital structure, there are different views about the target capital structure. For instance, the static trade off theory argues that there is an optimum capital structure that maximizes firm value while the pecking order hypothesis assumes that there is no well-defined target capital structure rather financing is the matter of the risk related to each financing alternatives (Fama and French, 2002).

Further, there have been a lot of controversies and conflicting issues about the existence of an optimum capital structure. An optimum capital structure exists where the value of the firm is maximized and the cost of capital is minimized. On the other hand, optimal capital structure is 100 percent debt financing, which is not acceptable empirically. The great deal of flexibility in choosing a financial structure enables corporate entities to engage in capital restructuring by changing their debt equity ratio continually depending on the prevailing conditions (especially operating environments) in which they find themselves so as to maximize their values and minimize their costs. (Ajao, 2008) recommends that an optimal capital structure exists for all firms. Firms should

make use of debt to the point where the tax benefit from such debt is exactly equal to the cost that comes from the increased probability of financial distress

The choice of capital structure is one of the most important strategic financial decisions of firms. However, it has been the subject of substantial debate and investigation. The debate on what drives capital structure decisions and its impact on profitability is still open, (Amponsah et.al., 2013), (Aja, 2008) and (Rajan and Zingales, 1995).

There has been different researches conducted on the same issue in Ethiopia, but the results of the studies made by different scholars have inconsistency. (Amdemichael, 2012), (Muhammed et.al., 2015), (Mathewos, 2016) and (Aragaw, 2015) conducted a study on the same issue and they found a significantly negative relationship between financial performance and capital structure.

In spite of the above empirical researches, others found a different results on the relationship between capital structure and financial performance. For instance (Muhammed et.al., 2015) found that capital structure has a positive effect on the financial performance of commercial banks in Ethiopia when performance measured by return on equity. In addition, (Tariku, 2016) found a positive relationship between factors of capital structure and firms performance.

Moreover, studies conducted in Ethiopia focused on the determinants of capital structure (Daniel, 2011) in Ethiopian small scale manufacturing cooperatives, (Bayeh, 2013) assessed using evidence from Ethiopian insurance companies. Others study on the factors affecting capital structure decision (Saddam, 2014) evidenced from Ethiopian insurance firms and (Shibru et.al.,2015) from commercial banks. Mathewos, (2016), (Aragaw, 2015) and (Muhammed et.al., 2015) examined impact of capital structure on profitability of commercial banks in Ethiopia (both public and private owned) and (Tariku, 2016) evidenced from large private manufacturing firms of Ethiopia. Besides; to the knowledge of the researcher there is no one conducted a research on the effect of capital structure on profitability of private commercial banks in Ethiopia including macroeconomic level factor Inflation (INF) as explanatory variable.

Based on the discussion made in the above paragraphs on the findings of empirical literature and their focus area of study, it is clear that investigation on the effects of capital structure and profitability is inconclusive and requires further empirical works. Moreover, there is a dynamic working environment which significantly affects the decision of capital structure by business firms. This is the gap identified by the researcher of this study.



### **1.3. Objective of the study**

#### **1.3.1 General objective**

The general objective of the study is to investigate the effects of capital structure on profitability of private commercial banks of Ethiopia.

#### **1.3.2 Specific Objectives**

The specific Objectives of this study are:

- To examine the effect of debt to asset ratio on profitability of private commercial banks of Ethiopia.
- To investigate the effect of debt to equity ratio on profitability of private commercial banks of Ethiopia.
- To examine the effect of interest coverage ratio on profitability of private commercial banks of Ethiopia.

### **1.4. Research Hypothesis**

This research will test the three hypotheses in order to investigate the effect of capital structure on profitability of selected Private commercial banks in Ethiopia. Thus, hypotheses here under will be tested in this study.

- H1: Debt to asset ratio has positive and statistically significant effect on profitability of private commercial banks in Ethiopia.

Debt to asset ratio has positive and statistically significant effect on profitability for Ethiopian private commercial banks. The hypothesis was made based on the findings of different researchers.

For instance (Muhammed et.al., 2015) , (Tariku, 2016) and (Aragaw, 2015) found that debt to asset ratio has a positive effect on the financial performance of commercial banks in Ethiopia.

This study supports the researchers that debt to asset ratio has positive and statistically significant effect on profitability of private commercial banks in Ethiopia.

- H2: Debt to equity ratio has positive and statistically significant effect on profitability of private commercial banks in Ethiopia.

(Mathewos, 2016) and (Tamrat, 2015) conducted a study on the same issue and they found a significantly positive relationship between debt to equity ratio and financial performance. This study supports the researchers that debt to equity ratio has positive and statistically significant effect on profitability of private commercial banks in Ethiopia.

H3: Interest coverage ratio has positive and statistically significant effect on profitability of private commercial banks of Ethiopia.

### **1.5. Significance of the study**

This study deals with the effect of capital structure on profitability of private commercial banks in Ethiopia which is beneficial for different stakeholders. Among the beneficiaries:

**Management:** It enables the management bodies (board of directors) to understand how to decide optimal capital structure to attain profit maximization goal of bank, as well as to determining their optimal level of capital structure to achieve maximum level of firm's value and profitability with a minimal cost of capital.

**Government:** It can serve as a base for policy makers such as National Bank of Ethiopia to look at the appropriate level of capital requirement of private commercial banks.

**Investors:** Investors seek to invest in a firm which has maximum profitability with minimized risk. Hence; the study can help investors by providing alternative opportunities to decide where to invest more by protecting their investment .

**Customers:** Customers may require to know the current performance of banks to establish business relationship with private commercial banks. Hence this study could be used as a reference for customers in choosing private commercial banks in Ethiopia.

**Researchers:** The study could also be used as a reference material for other researchers in the area of corporate finance/capital structure and profitability in the future.

### **1.6. Delimitation /Scope of the study**

The scope of this study was limited to the examination of the effect of capital structure on profitability of 10 (ten) private commercial banks in Ethiopia over the period of 9 (nine) years (2009 to 2017). In order to make generalization from sample to population, and to improve the number of observation of the study, a combination of the maximum number of banks and years in which audited financial statements available were taken into account. As a result, the researcher achieved 90 number of observation by taking sample of ten private commercial Banks that have been operating and provided audited financial statements during the period of 2009 to 2017. To meet its objectives, the study was limited to examining the effect of capital structure on profitability of private commercial banks using independent variables: debt to asset ratio, debt to

equity ratio, interest coverage ratio. return on asset (ROA) and return on equity (ROE) were considered as dependent variables.

### **1.7. Limitation of the study**

The limitation of this study was absence of audited financial statements of lion International Bank (LIB) and Cooperative Bank of Oromiya(COOP) for the year ended 2017 on their websites. Therefore, the researcher collected published audited financial statements of respective banks to overcome the problem.

### **1.8. Organization of The Study**

This research is organized into five chapters: Chapter one is introduction in which research background, statement of the problem, objective of the study, hypothesis, delimitation/scope of the study, limitation and significance of the study are presented. Chapter two of the study presents review of theoretical and empirical literatures on capital structure and profitability. Chapter three presents the research methodology. Then, chapter four present the results and discussion of the study and finally, chapter five present conclusions and possible recommendations.

## **CHAPTER TWO**

### **2. LITERATURE REVIEW**

#### **2.1. General Introduction**

The literature review section of this study cover the overview of the Ethiopian banking system and capital requirement of commercial banks of Ethiopia, the theoretical and empirical studies review in the areas of capital structure and its effect on profitability. furthermore, it also covers the study variable and summary of empirical works conducted in the area together with the knowledge gap of the area and conceptual framework of the study.

#### **2.2. Capital requirements of commercial Banks in Ethiopia**

Currently, the major financial institutions operating in Ethiopia are banks, insurance companies and micro-finance institutions. The number of banks operating in the country reached 18 of which 16 are private, and the remaining 2 (Commercial Bank of Ethiopia and Development bank of Ethiopia) are state-owned (NBE, 2016/17).

The sustainability and expansion of banking business operation requires maintaining a level of capital proportionate with the volume of their business operation to withstand adverse operational results and hence increase profitability. Therefore, the National Banks of Ethiopia issued the Minimum Capital Requirement for Banks Directive No. SBB/50/2011. As per this directive the National Bank of Ethiopia raised the minimum capital requirement for banks from Birr 75 million to Birr 500 million to all banks operating in the country to meet the new requirement by since 2016 (NBE, 2011/12).

#### **2.3. Theoretical review**

This part of the literature review presents the review of the theories of capital structure and the effect of capital structure on profitability.

##### **2.3.1. Overview of Capital structure**

Capital structure refers to the different options used by a firm in financing its assets (Modugu, 2013). Generally, a firm can go for different levels/mixes of debts, equity, or other financial arrangements. The foundation for theories and research focus on the subject of capital structure began with the introduction of Modigliani and Miller's (M&M) theoretical model about corporate

capital structure in 1958 which is considered to have created the turning point for modern corporate finance theory. The theory provides insight into a firm's capital structure decision in a capital market free of taxes, transaction costs, and other frictions.

To survive and growth of any business the capital or resource must be needed but how can the business organizations get that capital? in other words what is the source of finances? Capital structure decision should answer this question. An appropriate capital structure is important not only because of the need to survival and growth or maximizing returns of business organizations, but also because of the impact of such decision on firm's ability to deal with its competitive environment (Mathewos, 2016).

Over the past several decades' corporate finance researchers have devoted considerable efforts to transform rationalism of capital structure into empiricism. The problem of developing a definitive theory of capital structure and designing empirical tests those are powerful enough to provide a basis for choosing among the various theories is still unresolved (Charles Yegon et.al, 2014).

### **2.3.2. Theories of Capital structure and Profitability/Value of firm**

Capital structure refers to several alternatives that could be adopted by a firm to get the necessary funds for its investing activities in a way that is consistent with its priorities. Most of the effort of the financial decision making process is centered on the determination of the optimal capital structure; where the cost of capital is minimized and firms' value is maximized.

Capital structure theory suggests that firms determine what is often referred to as a target debt ratio; which is based on various trade-off between the costs and benefits of debt versus equity. The theory of capital structure was first established by ( Modigliani and Miller, 1958). Following the seminar work of Modigliani and Miller (1958), a vast theoretical literature developed, which led to the formulation of alternative theories, such as the static trade off theory, pecking order theory and agency cost theory

There are numerous capital structure theories addressed in this paper. Among the theories are MM Static Trade off theory which derived by (Modigliani and Miller, 1963) was the earliest and most recognized which explains the formulation of capital structure, then trade off theory which assumed that there are optimal capital structures by trading off the benefits and cost of debt and equity.

However, recent studies have shown a focus shift from the Trade off theory to Pecking Order theory. While (Daniel, 2011) mentioned the other theories are agency cost theory, the free cash flow theory, the market timing theory and the signaling theory. (Daniel, 2011) also mentioned traditional Trade-Off theory and Pecking Order theory are most acceptable theories of capital structure.

### **2.3.2. 1 Modigliani and Miller (MM) theory**

In corporate finance theories, the seminal work by Modigliani and Miller (1958) in capital structure provided a basis for the development of the theoretical framework within which various theories were about to emerge in the future. ( Modigliani and Miller, 1958) concluded to the broadly known theory of “capital structure irrelevance” where financial leverage does not affect the firm’s value. However, their theory was based on very restrictive assumptions that do not hold in the real world. These assumptions include no taxes, no transaction costs, homogenous expectations, and perfect capital markets. The existence of bankruptcy costs and tax advantageous of interest payments lead to the concept of an “optimal” capital structure which maximizes the value of the firm, and hence minimizes its total cost of capital.

( Modigliani and Miller, 1958) reviewed their earlier position by incorporating tax benefits as determinants of the capital structure of firms. The key feature of taxation is that interest is a tax-deductible expense. A firm that pays taxes receives a partially offsetting interest “tax-shield” in the form of lower taxes paid. Hence, (Modigliani and Miller, 1963)proposed to use as much debt capital as possible in order to increase profitability and hence maximize the value of firms.

### **2.3.2. 2 Pecking Order Theory**

Pecking order theory is from (Myers, 1984). The pecking (preference) order theory of capital structure is among the most influential theories of capital structure. Its concept is that firms follow a certain hierarchy of preferences for different types of finance, reflecting their relative costs with the ranking being internal finance is preferred first, then, the safest security (debt), and equity as a last option. Internal financing is preferred first because it incurs no flotation costs and requires no disclosure of the firms’ financial information that may include firms’ potential investment opportunities and gains that are expected to accrue as a result of undertaking such investments.

Thus, this theory suggests that profitable firms, firms with significant amount of retained earnings, tend to maintain low level of debt in their capital structure. (Myers and Majluf, 1984) and (Myers,

1984) consider the asymmetric information to observe the pecking order theory under which leverage increases with the extent of information asymmetry. They argue that in imperfect capital markets, there are information asymmetries between firm insiders and outsiders (investors). Insiders might have more information about the firms' assets in place and its future investment opportunities. This is not reflected in the stock price since outside investors have only access to public information. Thus, according to the pecking order theory, external sources of capital are subject to adverse selection. Outsiders are aware of their relative ignorance and demand a premium on their investment returns. For this reason, firms prefer to finance their investments with the least information sensitive securities, such as internal funds or riskless debts.

In contrast, (Rajan and Zingales, 1995) argue that informational asymmetries between firm insiders and the capital markets are lower for large firms. So large firms should be more capable of issuing informational sensitive securities like equity, and should have lower debt.

### **2.3.2.3 Static Trade-off theory**

Trade-off theory claimed that a firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing, holding the firm's assets and investment plans constant (Myers, 1984). The goal is to maximize the firm value for that reason debt and equity are used as substitutes. According to this theory, higher profitability decreases the expected costs of distress and let firms increase their tax benefits by raising leverage; therefore, firms should prefer debt financing because of the tax benefit. As per this theory firms can borrow up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased probability of financial distress ( Ross et.al, 2002)

The trade-off theory is the oldest theory and is connected to the theory from Miller and Modigliani on capital structure that emphasize on optimal capital structure. Trade-off theory suggested the modified MM proposition stress out that the benefit of tax shield is offset by the firm costs of financial distress and agency cost (Shahdila et.al, 2015)

In other word, optimal level of leverage is achieved by balancing the benefits from interest payments and costs of issuing debt. While (Shahdila et.al, 2015) stated that Trade Off theory expected to choose a target capital structure that maximizes the firm value by minimizing the costs of prevailing market imperfections. This theory also called as tax based theories and bankruptcy

costs. It assumed each source of money has its own cost and return and these are associated with the firm's earning capacity and its business and insolvency risks. Therefore, firm with more tax advantage will issue more debt to finance business operation and the cost of financial distress and benefit from tax shield are balanced (Chen, 2011).

The preceding arguments led to the development of what is called the trade-off theory of leverage, in which firms trade off the benefits of debt financing (favorable corporate tax treatment) against higher interest rates and bankruptcy costs. In essence, the trade-off theory says that the value of a levered firm is equal to the value of an unlevered firm plus the value of any side effects, which include the tax shield and the expected costs due to financial distress.

#### **2.3.2.4 Agency cost theory**

Agency theory initiated by Jensen and Meckling (1976) suggests that agency costs arise from the conflict of interest between debt-holders and equity-holders. Commonly, managers, being part of the owners, tend to collaborate with equity-holders, thus if the firm is approaching financial distress, equity-holders may encourage managers to pass decisions, which, in effect, extract wealth from debt-holders to equity-holders (Buferna et al., 2005). If managers pass the decision to invest the raised fund in the risky investment in an intention to extract wealth from debt-holders, then the conflict of interest arises. According to Myers (1984), if the investment is successful, the benefits are enjoyed solely by equity-holders, i.e., debt-holders receive only the fixed interest on the capital they invested. In contrast, if the investment fails, the firm may default on debt, and then debt-holders suffer a lot since they cannot look beyond the assets of the corporation for satisfaction of their claims. This is because the liability is limited to the corporation.

Thus, sophisticated debt-holders tend to monitor the firms' behavior. Consequently, costly monitoring devices are included into debt agreements, thereby increasing the cost of capital offered to the firm. Thus, firms with relatively higher agency costs tend to maintain lower level of debt. However, the agency problem can be mitigated if the debt is secured with collateralizable tangible assets. This indicates that financiers may not be the losers, if the borrower firm goes bankrupt, i.e., at least the principal amount can be compensated by selling the collateralized tangible asset.

#### **2.3.2.5 Signaling theory**



The concept of signaling was first studied in the context of job and product markets was developed into signal equilibrium theory by (Spence, 1973), which says a good firm can distinguish itself from a bad firm by sending a credible signal about its quality to capital markets. The signal will be credible only if the bad firm is unable to mimic the good firm by sending the same signal.

If the cost of the signal is higher for the bad type than that of the good type firm, the bad type may not find it worthwhile to mimic, and so the signal could be credible. ( Ross et.al, 2002) shows how debt could be used as a costly signal to separate the good from the bad firms. Under the asymmetric information between management and investors, signals from firms are crucial to obtain financial resources. Ross assumes that managers (the insiders) know the true distribution of firm returns, but investors do not. Signaling of higher debt by managers then suggests an optimistic future and high quality firms would use more debt while low quality firms have lower debt levels. In this way, a good firm can separate itself by attracting scrutiny while the bad firm will not mimic because the bad firm will not want to be discovered.

Two types of signaling inside information have been suggested: one is the costly signaling equilibrium discussed by (Spence, 1973), the other is the costless signaling equilibrium as proposed by (Brennan and Kraus, 1984). A signal is costly if the production of the signal consumes resource or if the signal is associated with a loss in welfare generated by deviations from allocation or distribution of claims in perfect markets. The signaling paradigm is multivariate for financial instruments. it has been demonstrated that debt could be used as a signal to differentiate the potential competition of new entrant firms.

### **2.3.2.6 Windows of Opportunity**

If markets are efficient, then security prices should reflect all available information; hence they are neither underpriced nor overpriced (except during the time it takes prices to move to a new equilibrium caused by the release of new information).

The windows of opportunity theory states that managers don't believe this and supposes instead that stock prices and interest rates are sometimes either too low or too high relative to their true fundamental values. In particular, the theory suggests that managers issue equity when they believe stock market prices are abnormally high and issue debt when they believe interest rates are abnormally low. In other words, they try to time the market. Notice that this differs from signaling theory because no asymmetric information is involved: These managers aren't basing their beliefs on insider information, just on a difference of opinion with the market consensus (Baker.et.al., 2002).

## **2.4. Empirical Literature Review on Capital structure and profitability**

### **2.4.1. Cross Country Studies**

In this section empirical studies that have been made regarding on the effect of capital structure on performance of commercial banks.

(Amponsah et.al., 2013) investigated the relationship between capital structure and profitability of listed firms in Ghana during the five year period from 2005 to 2009. They described the relationship between the firms' profitability and capital structure based on the ideas from different literatures showed that there is either a positive, negative or neutral relationship between profitability and capital structure. They also indicated that there is no conclusive evidence of what should be the optimal capital. Regression analysis was used to investigate the relationship between capital structure and profitability. The authors used, average profitability and debt ratios to determine whether Ghanaian listed firms depended on debt or not.

Similar to (Abor, 2005) study, the results of (Amponsah et.al., 2013) also revealed that, there is a statistically significant positive relationship between profitability and short term debt and a significantly negative relationship between profitability and long term debt. However, the results revealed a statistically negative relationship between profitability and total debt contrary to (Abor, 2005) study. The results also revealed that, Ghanaian listed firms relied more on short term debt than long term debt. The average short term debt to total capital ratio was 52% and long-term debt to total capital ratio was 11%.

(Chiang and Fen, 2013) also applied the Generalized Method of Moments technique for dynamic panels using bank-level data for 42 Asian countries over the period 1994 to 2008 to investigate the impacts of bank capital on profitability and risk.

They ignored the influence factors even though, the extant literature presents an ambiguous impact of bank capital on profitability (risk), however, when the effects from the influencing factors are taken into consideration, three conclusions are reached. First, along with the change in the categories of banks, investment banks have the lowest and positive capital effect on profitability, whereas commercial banks reveal the highest reverse capital effect on risk. Second, banks in low-income countries have a higher capital effect on profitability; banks in lower-middle income countries have the highest reverse capital effect on risk, while banks in high-income countries have the lowest values. Third, banks in Middle Eastern countries own the highest and positive capital effect on profitability. Far East & Central Asian banks have the largest reverse capital effect on risk, while the lowest value occurs in Middle Eastern countries' banks. Finally, their results also reveal that persistence of profit is greatly affected by different profitability variables, and all risk variables show persistence from one year to the next.

Using unbalanced panel data from all non-financial listed firms during the period 2007–2012 (Phuong and Bich, 2017) investigated the effect of capital structure on firms performance in Vietnam. The results indicated that all debt ratios : long term to total asset, short term debt to total asset and total debt to total have significantly negative relation to firm performance which was measured by ROA, ROE and Tobin's Q. This outcome is not in accordance with most studies conducted in developed countries, which hypothesize a positive relationship between capital structure and firm performance; however, it is consistent with some studies in the context of developing markets. The study argued that in typical developing market like Vietnam, the benefits of debt from tax saving may be less than financial distress cost. In addition, the monitoring role of debt is not substantial because of severe information asymmetry and under-developed financial system.

The relationship between capital structure or leverage and performance of listed bank in Ghana from 2000 to 2010 was investigated by (Awunyo and Badu, 2012). Data was collected from Ghana stock exchange and annual report of the listed banks. The authors used Panel regression methodology to analyze the data.

The result revealed that the banks listed on the Ghana Stock Exchange are highly geared and negatively related to the banks performance. The study also showed that there is high level gearing among listed banks. This can be attributed to their over dependency on short term debt as a result relatively high Bank of Ghana Lending rate and low level of bond market activities.

The regression result also revealed that capital Structure is inversely related to performance of the listed bank in terms of return on Equity and Tobin's q.

Multiple regression models were used to evaluate the relationship between capital structure and banking performance in Pakistan by (Mujahid et.al, 2014). Performance is measured by return on assets, return on equity and earnings per share. Determinants of capital structure contains long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio. Results of the study validated a positive relationship between factors of capital structure and performance of banking industry.

This study examines based on the data found from the annual financial statements of 12 commercial banks listed on Amman Stock Exchange, (Taani, 2013) examined the impact of capital structure on performance of Jordanian banks.

The study covered a period of five (5) years from 2007-2011. Multiple regressions was applied on performance indicators such as Net Profit (NP), Return on Capital Employed (ROCE), Return on Equity (ROE) and Net Interest Margin (NIM) as well as Total Debt to Total Funds (TDTF) and Total Debt to Total Equity (TDTE) as capital structure variables.

The results show that bank performance, which is measured by net profit, return on capital employed and net interest margin is to be significantly and positively associated with total debt; while total debt is found to be insignificant in determining return on equity in the banking industry of Jordan.

Berger and Bonaccorsi (2006) found a significantly positive association between profitability and debt to asset ratio in a study designed to investigate the relationship between debt to asset ratio and profitability on the one hand (Abor, 2005) has also reported a significantly positive relationship between the ratios of short term debt to total assets & profitability but a negative association between the ratio of long term debt to total assets and profitability.

Decisions on capital structure was one of the hardest and most challenging issues facing the banks, but also is the most vital decision about continued their survival (Zaroki et.al, 2015). They investigated the relationship between capital structure on the banks performance of the listed banks in Tehran Stock Exchange for the 2008 to 2013 period. Three indicators of return on assets, return on equity and earnings per share as measures of bank performance. The results of estimating the model with fixed effects method implies that the capital structure has a positive impact on earnings

per share and has a negative effect on return on assets, but no significant effect on return on equity. Also, bank size has a significant and positive effect on all three performance criteria and also asset growth has a significant and positive effect only on return on equity.

Capital structure is considered important corporate financial management context and is mainly related to the establishment of an ideal debt policy. The determination of a company's capital structure constitutes a difficult decision, one that involves several and antagonistic factors, such as risk and profitability. Despite of substantial theoretical developments in the field of corporate finance over the past several decades, the rift between theory and practice still needs to be reconciled (Charles Yegon et.al, 2014). The authors o this study empirically investigated the relationship between capital structure and the firm's profitability of banking industry in Kenya, by using panel data extracted from the financial statements of the companies listed on the Nairobi Stock Exchange from year 2004-2012.

They found that a significant positive relationship between the short term debt and profitability and statistically significant negative relationship between long term debt and profitability. The results are partially consistent with the previous studies as the negative relationship between long term debt and the firm performance tends to sport the dominant pecking order theory. The association of short term debt and the financial performance in contrast attests the static trade-off theory. Total debt as a whole has no association with the firm's performance because of the inherited different characteristics of short term debt and long term debt (Charles Yegon et.al, 2014)

Capital is considering blood of bank strength (Akhtar et.al, 2016). Since, it helps banking sector to operate activities. In the event of difficulties it enables banks to operate continuously in viable and sound manners and solves the difficulties. The examined the effect of capital structure (debt to equity) on profitability, liquidity, tangibility, interest rate and growth rate to measure performance of banking sector of Pakistan. A five banks annual reports between 2005 and 2015 were used to find the data and pooled analysis to summarize the data for correlation and regression. The result showed that there are positive significant relationships between profitability, tangibility, liquidity, interest rate, and growth rate and capital structure.

The relationship between capital structure and profitability cannot be ignored because the improvement in the profitability is necessary for the long-term survivability of the firm. (Gill et.al., 2011) looked for extend (Abor, 2005) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the American service and

manufacturing firms. A sample of 272 American firms listed on New York Stock Exchange for a period of 3 years from 2005 – 2007 was selected. The correlations and regression analyses were used to estimate the functions relating to profitability (measured by return on equity) with measures of capital structure. The findings of this paper showed a positive relationship between short-term debt to total assets and profitability, long-term debt to total assets and profitability and total debt to total assets and profitability in the manufacturing industry.

Profitable firms depend more on equity as their main financing option (Fawzi et.al, 2012) which extended (Abor, 2005), and Gill, et al., (2011) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the industrial companies listed on Amman Stock Exchange during a six-year period (2004-2009). The study sample consisted of 39 companies. Applying correlations and multiple regression analysis, the results reveal significantly negative relation between debt and profitability. This suggests that profitable firms depend more on equity as their main financing option. Yet recommendations based on findings are offered to improve certain factors like the firm must consider using an optimal capital structure and future research should investigate generalizations of the findings beyond the manufacturing sectors (Fawzi et.al, 2012).

According to (Izzat, 2015) bank accumulated capital structure, on average, had no relationship with banks' profitability. Accumulated capital structure had negatively affected banks' strategic performance measures, on average, increasing capital structure to revenues ratio, results in a decrease in banks' market share, productivity, growth, and investors' valuation of banks' stocks, in the same year of investment, while only decreasing banks' productivity and investors' valuation of banks' stocks, in the second and third years to investment. They also indicated that annual capital structure investments, on average, had no relationship with banks' profitability.

Annual capital structure investments had negatively affected the strategic performance measures for three consecutive years, on average, increasing capital structure investments, results in a decrease in banks' market share, effectiveness, and investors' valuation of banks' stocks, but it had no effect on banks' growth.

(Revathy et.al., 2016) investigated the impact of capital structure on profitability of the manufacturing companies in India and attempted to establish the hypothesized relationship as to how far the capital structure variables affect the business revenue of companies and what the interrelationship is between capital structure variable and profitability. The authors tried to establish

the hypothesized relationship that capital structure variables has significant impact on profitability of manufacturing companies in India. A sample of 70 companies was chosen by multi-stage sampling techniques. The study revealed that there has been a strong one-to-one relationship between capital structure variable and Profitability and increase in Debt Equity Ratio inversely affects profit of the manufacturing companies listed in Bombay Stock Exchange in India (Revathy et.al., 2016).

(Mujahid et.al, 2014) reviewed different literatures on the impact of capital structure on bank performance on capital structure determinants of banks within Pakistan and other Countries. Multiple regression models were used to evaluate the relationship between capital structure and banking performance. Performance is measured by return on assets, return on equity and earnings per share. Determinants of capital structure contains long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio. Results of this study validated a positive relationship between factors of capital structure and performance of banking industry.

#### **2.4.2 Studies conducted in Ethiopia**

According to (Mathewos, 2016) the impact of capital structure on financial performance of selected commercial banks in Ethiopia over five (5) year period from 2011 to 2015 using secondary data collected from financial statements of the commercial banks. Data was also analyzed on quantitative approach using multiple regression models. The study used two accounting-based measures of financial performance (i.e. return on equity (ROE) and return on assets (ROA) as dependent variable and five capital structure measures (including debt ratio, debt to equity ratio, loan to deposit, bank's size and asset tangibility) as independent variable. The results indicated that financial performance, which is measured by both ROA and ROE, is significantly and negatively associated with capital structure proxies such as DER, SIZE and TANG whereas DR has positive and significant relationship with ROA and ROE.

(Amdemichael, 2012) studied factors affecting bank profitability for a total of eight commercial banks in Ethiopia, covering the period of 2000-2011. The study adopted a mixed methods research approach by combining documentary analysis and in-depth interviews.

The findings of the study showed that capital strength, income diversification, bank size and gross domestic product have statistically significant and positive relationship with banks' profitability. On the other hand, variables like operational efficiency and asset quality have a negative and statistically significant relationship with banks' profitability. However, the relationship for liquidity risk, concentration and inflation is found to be statistically insignificant.

In his study to see The effect of debt financing on profitability of commercial banks in Ethiopia (Tamrat, 2015), analyzed sample of eight commercial banks from all commercial Banks engaged in commercial banking activities the study period covered twelve years from the years (2002-2013). The dependent variable was return on asset (ROA) used to measure the profitability of commercial banks and the independent variable are debt to asset ratio, debt to equity ratio and interest coverage 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 study used one control variable that is firm size. The study mainly used secondary data but Primary data was also used to support the secondary data.

The data analyzed by using panel data analysis technique. The descriptive statistics and the correlation analysis were taken place by the researcher, followed by the diagnostic test, which necessitated in fulfilling the assumption of the classical linear regression model. Then, a fixed effect regression output result was presented and the results of the regression outputs were discussed. Finally, the author indicated that all independent variables had positive relationship with profitability and statistically significant.

(Tariku, 2016) addressed the effect of capital structure on firms' profitability with special emphasis on Ethiopian Large Private Manufacturing Firms using panel data of five consecutive years (2006/07-2010/11G.C). The secondary data sources mainly audited financial statements have been collected from the randomly selected thirty three large private manufacturing firms in Ethiopia. He has employed a linear regression model to analyze the relationship between firms' profitability and capital structure. Specifically, Random-effect Generalized Least Square of panel data regression model has been selected to empirically test the literature driven hypotheses. Finally, the findings of this study revealed that a significant positive relationship between firms' profitability and total debt ratio which indicated firm's capital structure.

Among the hypothesized capital structure determinants asset tangibility and size of the firm were found to have statistically insignificant contribution on capital structure of Ethiopian insurance companies (Bayeh, 2013). This study conducted by investigating important firm-level determinants



of capital structure on Ethiopian insurance companies. However, growth, profitability and age of the firm were found to have significant influence on Ethiopian insurance companies' capital structure. Liquidity and business risk were also significant for long term debt and total debt ratio respectively.

In his study, (Muhammed et.al., 2015) examined the relationship between capital structure and performance of commercial banks in Ethiopia. The investigation was based on panel data (from the year 2000-2012) collected from the annual reports of eight sample commercial banks in the country. This study established a model to measure the association between capital structure which is proximate by total debt to total asset (TDTA) and total debt to total capital (TDTC) and performance which is measured by return on asset (ROA), return on equity (ROE) and net profit margin (NPM). The results of regression analyses indicated that on average leverage has a positive effect on the financial performance of commercial banks in Ethiopia when performance measured by return on equity. In contrast, the similar analyses indicate that leverage has a significant negative effect on performance of commercial banks in Ethiopia when performance is measured by return on asset and net profit margin.

The choice of capital structure is one of the most important strategic financial decisions of firms. Since financing decisions influence profitability and hence firm's value, (Aragaw, 2015) examined the impact of capital structure on profitability of core business operations of commercial banks in Ethiopia. He obtained panel data from the audited financial statements of eight commercial banks and National Bank of Ethiopia for the period of twelve years (2001/02 – 2012/13). The study indicated that 89% of the total capital of commercial banks in Ethiopia in the period under study was made up of debt. Of this, 75% constitute deposit and the remaining was non-deposit liabilities. This has reaffirmed the fact that banks are highly levered institutions. The findings revealed that capital structure as measured by total debt to asset had statistically significant negative impact, whereas deposit to asset had statistically significant positive impact on profitability of core business operations of commercial banks. Moreover, loan to deposit, spread and asset size also had statistically significant and positive relationship with profitability. However, growth found to have statistically insignificant impact on profitability (Aragaw, 2015).

As (Ashenafi et.al, 2013) assessed the relationship between selected internal and external corporate governance mechanisms, and bank performance as measured by ROE and ROA. The Authors used structured review of documents, and commercial banks financial data were collected covering a

period 2005 to 2011. The findings indicated that board size and existence of audit committee in the board had statistically significant negative effect on bank performance; whereas bank size had statistically significant positive effect on bank performance. Similarly, capital adequacy ratio, as a measure of external corporate governance mechanism, had statistically significant positive effect on bank performance.

In addition, absence of organized stock exchange; high government intervention; lack of corporate governance awareness, absence of national standards of corporate governance, as well as accounting and auditing; and weak legal framework to protect minority shareholder rights are the major factors with adverse impact on corporate governance and bank performance in Ethiopia.

Studies conducted in Ethiopia focused on the determinants of capital structure (Daniel, 2011 ) in Ethiopian small scale manufacturing cooperatives, (Bayeh, 2013) assessed using evidence from Ethiopian insurance companies. Others study on the factors affecting capital structure decision (Saddam, 2014) evidenced from Ethiopian insurance firms and (Shibru et.al.,2015) from commercial banks. Mathewos, (2016), (Aragaw, 2015) and (Muhammed et.al., 2015) examined impact of capital structure on profitability of commercial banks in Ethiopia (both public and private owned) and (Tariku, 2016) evidenced from large private manufacturing firms of Ethiopia. Besides; to the knowledge of the researcher there is no one conducted a research on the effect of capital structure on profitability of private commercial banks in Ethiopia including macroeconomic level factor: Inflation (INF) as explanatory variable. These were the gaps identified by the researcher of this study.

#### **2.4.3 Conceptual framework**

Based on the theoretical concepts and empirical studies stated above as well as to meet the objectives of the study and taking in to account the environment in which banks operate, the following variables are selected and presented in the conceptual framework developed as follows:

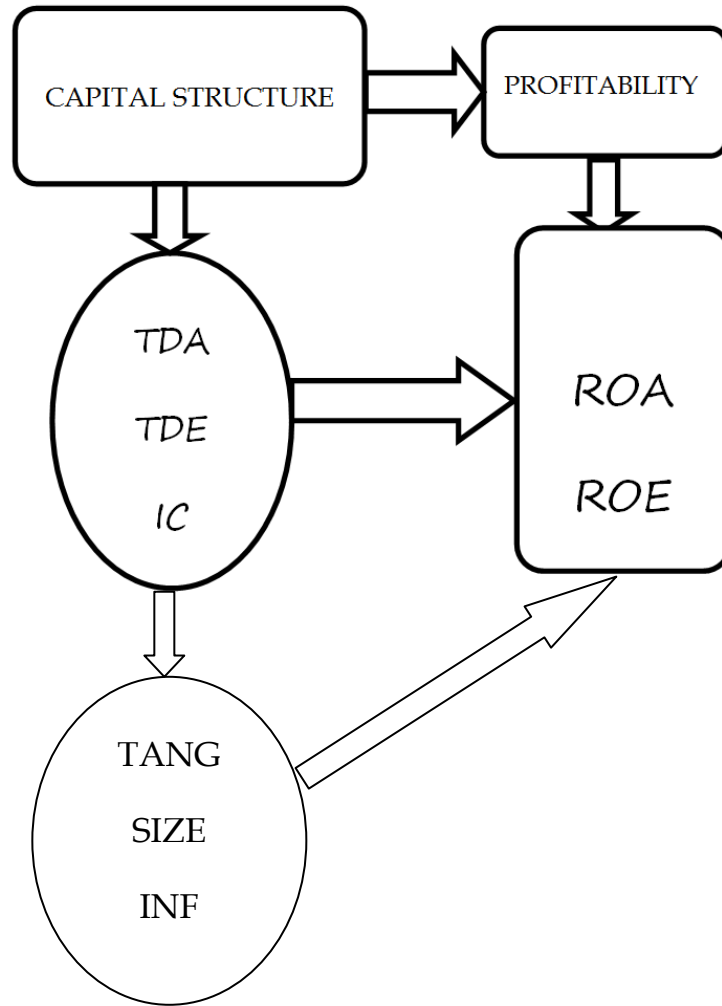


Figure 2. 1 Conceptual Framework

Source: Developed by The researcher

## CHAPTER THREE

### 3. RESEARCH METHODOLOGY

#### 3.1. Introduction

The preceding chapter discussed about both theoretical and empirical studies and it tried to give a brief summary of the chapter and the Knowledge gap identified by the researcher which is intended to address in this study.

The purpose of this chapter is to discuss the methods adopted throughout the study to accomplish the research objectives. The chapter is organized as follows: The first section presents the research design, the second part covers the research approach adopted to examine the effect of capital structure on profitability, while the next two sections are about study population and sample and sampling technique. Method of data collection and method of data analysis are presented in the fourth and fifth section respectively. Furthermore, the next two sections state about model specification and description of variables. Finally, the summary of variables used in the Study and their expected sign together with their financial measurements is presented.

#### 3.2. Research Design

A research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan is the complete scheme or program of the research. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data (Kumar, 2011).

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

As per (Kothari, 2004) explanatory research design examines the cause and effect relationships between dependent and independent variables. Therefore, since this study was designed to examine the cause and effect relationship between capital structure and profitability of Ethiopian private commercial banks using profitability as a dependent and capital structure proxies as an independent variable, it is an explanatory research design.

### **3.3. Research Approach**

As stated in (Creswell, 2009) in terms of research study there are three familiar types of research approaches to business and social science researches namely: quantitative, qualitative and mixed research approaches. Therefore, the following discussion briefly presents the basic nature of quantitative, qualitative and mixed research approaches along with their respective merits and demerits.

In quantitative research approach enough detail about a study design is provided for it to be replicated for verification and reassurance. In qualitative research little attention is paid to study designs or the other structural aspects of a study, hence the replication of a study design becomes almost impossible. This leads to the inability of the designs to produce findings that can be replicated. Findings through quantitative study designs can be replicated and retested whereas this cannot be easily done by using qualitative study designs (Kumar, 2011).

Quantitative study designs are specific, well structured, have been tested for their validity and reliability, and can be explicitly defined and recognized. Moreover, in quantitative research the measurement and classification requirements of the information that is gathered demand that study designs are more structured, rigid, fixed and predetermined in their use to ensure accuracy in measurement and classification. Quantitative study designs have more clarity and distinction between designs and methods of data collection (Kumar, 2011).

Qualitative research on the other hand is an approach in which the investigator often makes knowledge claims based primarily on the multiple meanings of individual experiences, socially and historically constructed meanings, participation in issues, collaboration or change oriented with an intent of developing a theory or pattern (Creswell, 2009).

One of the most distinguishing features of qualitative research is the adherence to the concept of respondent concordance whereby you as a researcher make every effort to seek agreement of your respondents with your interpretation, presentation of the situations, experiences, perceptions and conclusions (Kumar, 2011).

Whereas, mixed research is an approach to inquiry that combines or associates both qualitative and quantitative forms (Creswell, 2009).

A good design is a design which yields maximal information and provides an opportunity for considering many different aspects of a problem is considered most appropriate and efficient design in respect of many research problems. Thus, the question of good design is related to the purpose or objective of the research problem and also with the nature of the problem to be studied. (Kothari, 2004)

Therefore, taking the research problem and objective as stated in the previous sections as well as the quantitative nature of the financial data i.e. statement of profit and loss and statement of financial position of selected Ethiopian private commercial banks collected through document survey along with the philosophy of the different research approaches, quantitative research approach is preferred and thought as appropriate over the others for this study.

### **3.4. Study Population**

The study populations of the research are all private commercial banks in Ethiopia. There are Sixteen private commercial banks in Ethiopia that are: Dashen Bank S.C (DB), Awash International Bank S.C (AIB), Wegagen Bank S.C (WB), United Bank S.C (UB), Nib International Bank S.C (NIB), Bank of Abyssinia S.C (BOA), Lion International Bank S.C (LIB), Cooperative Bank of Oromia S.C (COOP), Berehan International Bank S.C (BIB), Buna International Bank S.C (BUIB), Oromia International Bank S.C (OIB), Zemen Bank S.C (ZB), Addis International Bank S.C (AIB), Abay Bank S.C (AB), Enat Bank S.C (EB) and Debub Global Bank S.C (DGB) as per the annual report of NBE (NBE,2016/17)

### **3.5. Sample and Sampling Techniques**

Sampling is the process of selecting a few (a sample) from a bigger group (the sampling population) to become the basis for estimating or predicting the prevalence of an unknown piece of information, situation or outcome regarding the bigger group. A sample is a subgroup of the population you are interested in (Kumar, 2011).

purposive sampling, also known as judgmental, selective or subjective sampling, reflects a group of sampling techniques that rely on the judgment of the researcher when it comes to selecting the units (e.g. people, case/organizations, events, pieces of data) that are to be studied. These purposive sampling techniques include maximum variation sampling, homogeneous sampling and typical case sampling; extreme (deviant) case sampling, total population sampling and expert sampling (Sharma, 2017).

To meet the desired objective of this study and to make generalization from sample to population, the researcher used maximum combination of years and number of banks and achieved the maximum number of observations through purposive sampling technique.

Thus, banks that has been operating for nine years back from 2017 are included in the sample. Due to this, from 16 private commercial banks operating in the country, this study takes sample of ten banks namely; Dashen bank (DB), Awash international bank (AIB), Bank of Abyssinia (BOA), Wegagen bank (WB), United bank (UB) and Nib international bank (NIB), Zemen Bank (ZB), Oromiya international Bank (OIB), Cooperative bank of Oromiya (COOP) and Lion international Bank (LIB) for the period of 2009 to 2017 which enable the researcher to see a total of 90 observations during the study period.

According to ( NBE,2017) annual report, the sample banks market share in terms of branch network and capital was 78.90% and 79.5 % respectively. However; private banks capital have 35.6% market share from the banking industry of Ethiopia and the remaining 64.4% share is taken by public banks. Besides, they have good experience in the banking operation and the sample taken also 62.5 % of the total population of sixteen private commercial banks in the country. Hence, it is believed to make generalization from sample to population.

### **3.6. Method of Data Collection**

Given the research design, secondary data will be used to meet the objectives of the study. That is, secondary data generally provide a source of data that is both permanent and available in a form that can be checked relatively easily by others and increases the dependability of the data, hence ensure data quality.

Since NBE is the controller and governor of financial institutions of Ethiopia the secondary data collected from NBE is more credible than other sources. Audited financial statements of the respective banks also increase the credibility and quality of data. Taking this in to consideration, in order to increase the quality and source credibility of data the researcher was collected audited financial statements of the respective banks from National bank of Ethiopia(NBE). Furthermore, annual reports of the sampled private commercial banks were also collected from the respective banks.

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

To achieve objective of the study, the study mainly concentrated on quantitative analysis. Hence, the researcher used econometric model to examine the effect of capital structure on profitability of private commercial banks in Ethiopia and General least square (GLS) method applying Eviews-8 econometric software package for the study was employed. According to (Brooks, 2008) regression is concerned with describing and evaluating the relationship between a given variable (usually called the dependent variable) and one or more other variables (usually known as the independent variables). Thus, the researcher adopted panel data regression model to examine the effect of capital structure on profitability of private commercial banks in Ethiopia.

It is possible to analyze Bank data over a study period time by examining high probability heterogeneous variables. Furthermore, the multi-collinearity problem is less severe in panel data methods. Finally, panel data allow the researcher to make econometric analysis with short period of time series data or deficient cross-section data (Uğurlu, 2010 )

The regressed panel data output was analyzed by using descriptive statistics (Mean values, maximum, minimum and standard deviations); correlations and multiple linear regression analysis were used to analyze the general trends of the data obtained from sample private Commercial banks. Correlation matrix was used to examine the relationship between the dependent variable and independent/explanatory variables.

In the analysis of the descriptive statistics, the mean, standard deviation, maximum and minimum values will be used to analyze the trends of the data.

In addition, diagnostic tests will be managed in order to check the validity of the model based on the assumption of the Classical Linear Regression Model. Specifically, the assumption tests that will be managed include  $E(u) = 0$  the errors have zero mean, Heteroskedasticity Test, Autocorrelation Test, and test for Multicollinearity and Normality.

### **3.8. Model Specification**

According to (Brooks, 2008) it is very easy to generalize the simple model to one with  $k$  regressors (independent variables). In this respect, the study examined the effect of capital structure on profitability of private commercial banks in Ethiopia by employing a multiple regression model which has the following general form;



$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \varepsilon_i, \quad i = (1, 2, \dots, i).$$

Where;  $Y_i$  is the  $i^{\text{th}}$  observation of the dependent variable,  $\alpha$  is the constant term,  $X_{1i}, \dots, X_{ki}$  are the  $i^{\text{th}}$  observation of the independent variables,  $\beta_1, \dots, \beta_k$  are the regression coefficients,  $\varepsilon_i$  is the  $i^{\text{th}}$  observation of the stochastic error term.

Based on the above general model the effect of capital structure on profitability of private commercial banks were evaluated using the model outlined below;

$$ROA_{it} = \alpha + \beta_1 TDA_{it} + \beta_2 IC_{it} + \beta_3 \ln(SIZE)_{it} + \beta_4 Tang_{it} + \beta_5 INF + \varepsilon_{it}$$

$$ROE_{it} = \alpha + \beta_1 TDA_{it} + \beta_2 IC_{it} + \beta_3 \ln(SIZE)_{it} + \beta_4 Tang_{it} + \beta_5 INF + \varepsilon_{it}$$

Where;

**ROA**=Rate of return on Asset

**ROE**=Return on equity

$\alpha$  = The constant term

**$\beta_1, \beta_2, \beta_3, \beta_4,$  and  $\beta_5$**  = the coefficients of each independent variables

**TDA** = Debt to Asset ratio

**IC** = Interest coverage ratio

**(SIZE)** = Natural logarithm of total asset

**Tang** = Tangibility of banks

**INF** = Annual inflation rate of Ethiopia

$\varepsilon_{it}$  = The error term of firm  $i$  at year  $t$

### 3.9. Description of Variables

There are dependent and independent variable which will be addressed in the study. Profitability will be considered as a dependent variable with a measure of Return on asset (ROA) and return on Equity (ROE). While Capital structure will be the independent variable with a proxies of debt to asset ratio, debt to equity ratio, interest coverage ratio and bank specific control variables: bank's

size and tangibility. Furthermore inflation (INF) was used as macro level factor. The dependent and independent variables are detailed as follows.

### **3.9.1. Dependent Variable**

Bank profitability is the dependent variable in this study. Bank performance is usually measured by three alternative measures ROA, ROE or NIM. Studies conducted on the determinants of banks performance use one or a combination of these ratios as a measure of performance in their analysis. According to (Mohana and Tekeste, 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. From bank profitability measures alternatives ROA and ROE were chosen because it is important accounting based and widely accepted measures of financial performance.

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

The return on asset (ROA) reflects the ability of a bank's management to generate profits from the bank's assets. It shows the profits earned per birr of assets and indicates how effectively the bank's assets are managed to generate revenues, although it might be biased due to off-balance sheet activities. This is probably the most important single ratio in comparing the efficiency and operating performance of banks as it indicates the returns generated from the assets that bank owns, (Tan and Floros , 2012) ROA is the most comprehensive accounting measure of a bank's overall performance. Because of this, the majority of studies employed ROA as performance measure, for instance, (Sufian, 2011), (Amdemichael, 2012) , (Mathewos, 2016) and (Mohana and Tekeste, 2012), ( Delen et.al., 2013) and (Tamrat, 2015) have calculated the return on asset (ROA) by using the following formula:

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

#### **Return on Equity ROE**

Return on equity (ROE): Another measure of profitability, usually considered in conjunction with ROA, is ROE. A bank's ROE is calculated by dividing net income by average shareholders' equity (Fitsum and Asmerom, 2016). The ROE measure is the more relevant performance measure for shareholders. Banks that rely heavily on deposits and borrowings to support assets tend to have higher ROEs than those that depend on shareholder's funding. ROE is an internal performance

measure of shareholder value, and it is by far the most popular measure of performance, since: (i) it proposes a direct assessment of the financial return of a shareholder's investment; (ii) it is easily available for analysts, only relying upon public information; and (iii) it allows for comparison between different companies or different sectors of the economy. ROE is sometimes decomposed into separate drivers: this is called the "Dupont analysis", where  $ROE = (\text{result/turnover}) * (\text{turnover/total assets}) * (\text{total assets/equity})$ . The first element is the net profit margin and the last corresponds to the financial leverage multiplier. ( European Central Bank , 2010).

(Mathewos, 2016), (Fitsum and Asmerom, 2016) Calculated return on equity ROE as a measure of bank performance using the following formula:

$$ROE = \frac{\text{Net Income}}{\text{Total Equity}}$$

### **3.9.2. Independent Variables**

The explanatory (independent) variables in this study are debt to asset ratio, debt to equity ratio and interest coverage ratio. These serve as a proxy for capital structure.

#### **Debt to asset ratio**

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

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:

$$\text{Debt to Asset ratio} = \text{Total Liabilities} / \text{Total Assets}$$

#### **Debt to Equity Ratio**

It is a measure of the proportion of debt to shareholders funds (i.e. Net worth) in the total financing of a business. Items such as accumulated losses and deferred expenditures are eliminated from the shareholders' funds before using it as denominator. The ratio indicates how much money was raised

as debt. It is the ratio which indicating the relative proportion of equity and debt used to finance a company's asset which is an indicator of the financial leverage. It is equal to total debt divided by shareholders' equity. The two components are often taken from the firm's statement of financial position (balance sheet). When used to calculate a company's financial leverage, the debt usually includes only the total debt. This is a useful measure as it helps the investor see the way management has financed operations.

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

$$\text{Debt to Equity Ratio} = \text{Total Liabilities} / \text{Total Equity}$$

### **Interest Coverage Ratio**

The interest coverage ratio (ICR) is a measure of a company's ability to meet its interest payments. Interest coverage ratio is equal to earnings before interest and taxes (EBIT) for a time period, often one year, divided by interest expenses for the same time period. The interest coverage ratio is a measure of the number of times a company could make the interest payments on its debt with its EBIT. It determines how easily a company can pay interest expenses on outstanding debt. Interest coverage 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 and Moynihan, 2010) indicated the ratio of net operating income (or EBIT) to interest charge which can be expressed as:

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

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. When a company's interest coverage ratio is only 1.5 or lower, its ability to meet interest expenses may be questionable. An interest coverage ratio below 1.0 indicates the business is having difficulties

generating the cash necessary to pay its interest obligations (i.e. interest payments exceed its earnings (EBIT)). 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.

### **3.9.3. Control Variables**

There are a number of factors that affect the bank's profitability rather than capital structure proxies; this is why control variables are included in the model. In this study the researcher employed the firm size and tangibility as a control variable.

#### **Firm Size**

It is a control variable which measure by natural logarithm of total assets ( Kodongo et.al, 2014) and ( King and Santor, 2008) In most previous studies, firm size is expressed by the logarithm of total assets. This indicator is the most suitable measure of a firm's size. Total assets are defined as the sum of net fixed assets, total intangibles, total investments, net current assets and other assets. It assesses whether the size of the firm is related to performance. 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. Consequently, positive relationship between a firm's size and debt level is expected.

The impact of size on firm performance is strongly debated among researchers. In the study, (Aloy, 2012) shows the negative effect of firm size on performance. The authors point out that, the more a firm size is, the more difficult it is to manage. In contrast, (Gatete, 2015), (Doğan, 2013) and (Babalola, 2013) found a positive impact of firm size on performance. In their study they conclude that a large firm size reduces costs due to economies of scale that this entails, large firms can also raise capital at a lower cost. It is used by many scholars in their studies and for the purpose of this study, the researcher used as a control variable; it is calculated by the following formula:

**Firm Size = Natural logarithm of total asset**

**Or**

**Bank Size=Ln(Total Asset)**

#### **Tangibility**

Due to the conflict of interest between debt providers and shareholders (Jensen and Meckling, 1976), lenders face risk of adverse selection and moral hazard. Consequently, lenders may demand security, and collateral value (proxied by the ratio of fixed to total assets) may be a major determinant of the level of debt finance available to companies.

According to (Stiglitz and Weiss, 1981), (Williamson, 1988) and (Harris Raviv, 1990) the degree to which firms' assets are tangible and generic should result in the firm having a greater liquidation value. Capital intensive companies will relatively employ more debt (Myers, 1984), as pledging the assets as collateral (Harris Raviv, 1990) or arranging so that a fix charge is directly placed to particular tangible assets of the firm. Bank financing will depend upon whether the lending can be secured by tangible assets. (Berger and F. Udell, 1998)

Different research showed that assets defined the capital structure or financing decision in any types of firm. One of the aim of conducting this research to find out relationship between capital structure and tangibility in Commercial banks of Ethiopia. (Akhtar et.al., 2016) has found different results for small and medium companies in Pakistan. For small term companies shows negative relationship between tangibility and capital structure. And positive relationship between tangibility and large companies. And medium size use less interest rate as compare to small size firm. Result similar to principle short term assets finance use for short term financing and long term assets use long term financing.

$$\text{Tangibility} = \text{Fixed asset} / \text{Total asset}$$

#### **3.9.4. Macroeconomic Factor**

Among others, (Amdemichael, 2012) use several macroeconomic control variables that probably affect banks' performance. The macroeconomic control variables are external probably affect banks' performance. The macroeconomic control variable inflation rate is selected as possible macro-economic variable that can affect bank profitability in this study.

#### **Inflation**

A growing theoretical literature describes mechanisms whereby even predictable increases in the rate of inflation interfere with the ability of the financial sector to allocate resources effectively. More specifically, recent theories emphasize the importance of informational asymmetries in credit markets and demonstrate how increases in the rate of inflation adversely affect credit market frictions with negative repercussions for financial sector (both banks and equity market) performance (Hooshyari and Pakdel, 2015).

High inflation rate implies high interest rates, which mean high income but it lead to a very bad effect of borrowers, performance of financial sector is declared trough growth in GDP and it also effects the bank profitability.

(Jawad and Ullah, 2015) found a positive relationship between inflation and profitability of Pakistani commercial banks and the inflation in Pakistan is fully anticipated and interest rates should be adjusted accordingly to their profitability .

### 3.9.5. Summary of Variables

Category	Variables	Measurement /Ratios used	Expected sign/ impact of independent variables on ROA and ROE
<b>Dependent Variable</b>	ROA	Net income/Total Asset	NA
	ROE	Net income/Total equity	NA
<b>Independent Variable</b>	Debt to Asset ratio	Total Liabilities / Total Assets	Positive
	Debt to equity ratio	Total Liabilities / Total Equity	Positive
	Interest coverage ratio	EBIT / Interest expense	Positive
<b>Firm specific Factors</b>	Bank's size	Natural logarithm of total asset	
	Tangibility	Fixed asset / Total asset	
<b>Macroeconomic factor</b>	Inflation	annual inflation rate of Ethiopia	
Source: Audited Statements (Income statement and Balance sheet) of sample banks and data from National bank of Ethiopia (NBE 2016/17)			

Table 3. 1 Description of variables and their expected sign



## CHAPTER FOUR

### 4. ANALYSIS AND DISCUSSION

The previous chapter presented the research methodology applied to meet the objective of the study. This chapter presents the results and analysis of the findings as well as discussion of results. The chapter is organized in to four sections. The first section presents summary of statistics. The second and the third Section presents the Classical Linear Regression Model assumptions tests and results of regression analysis respectively. The fourth section presents the summary of findings.

#### 4.1. Descriptive statistics

The table 4.1 demonstrates the mean, median, maximum, minimum and standard deviation values for dependent and independent variables for sample banks over the year 2009-2017.

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
ROA	0.026	0.026	0.052	-0.032	0.011
ROE	0.201	0.202	0.357	-0.126	0.077
TDA	0.863	0.874	0.940	0.671	0.038
TDE	6.673	6.752	11.795	2.042	1.799
IC	2.553	2.605	5.713	-22.851	2.902
SIZE	22.736	22.910	24.460	19.604	0.978
TANG	0.022	0.020	0.064	0.007	0.013
INF	0.153	0.097	0.364	0.028	0.115

Table 4. 1 Descriptive Statistics of Dependent and Independent Variables

Source: Annual report of sample banks computed using EViews 8

The mean, of Return on Asset (ROA) was 2.6% and standard deviation 1.1%. Whereas the mean return on equity (ROE) was 20.1 % and the standard deviation of 7.7 %.

As indicated in table 4.1 , the profitability measured by (ROA) and (ROE) shows that Ethiopian commercial banks have achieved on average a positive profit over the last nine years. For the total sample, the mean of (ROA) and (ROE) was found to be 2.6 % and 20.1% respectively. This indicates that the sample commercial banks on average earned a net income of 2.6 % of the total asset and 20.1 % of the total equity. While the maximum of 5.20% and 35.7% with a minimum of -3.2% and -12.6% respectively. That means most profitable banks among the sampled earned 5.2% and 35.7% of the total asset of the total equity respectively.

On the other hand, the least profitable bank of the sample private commercial banks lost 3.2 % of net income for an investment in the assets and 12.6 % of net income on equity of the bank. The standard deviation of (ROA) and (ROE) was 1.1% and 7.7 % respectively, which reflects the presence of deviation on earned profit among the sampled private commercial banks on asset and equity from the mean on average.

The capital structure was represented by total debt to total asset ratio (TDA) total debt to equity ratio (TDE) and interest coverage ratio (IC) also used as a third measure of capital structure of banks to examine the effect of TDA ,TDE and IC on profitability of private banks. The mean of TDA,TDE and IC of the sampled banks in the study was 0.863 and 6.673 and 2.553 respectively.

TDA has a mean value of 0.863. The mean value shows that during the study period the sample private commercial banks finance their total assets by using 86.3% of debt. In addition, the maximum and minimum values of TDA are 0.94 and 0.671 respectively, with the standard deviation of 0.038. This indicates that in the study period the sample banks have variation in using debt and equity on their total assets or finance their operation. In general, the mean value of debt to total asset ratio 86%, indicates the fact that banks are highly levered institutions in Ethiopia.

The mean value 6.673 shows that during the study period the sample banks finance their capital structure by using 667% debt in their capital structure. It also revealed that on average the banks in Ethiopia are more debt than equity financing. The ratio shows on average 6.673 times more debt than equity capital in the banks' capital structure. The result indicates that banks in Ethiopia use more debt financing than equity financing.

The interest coverage ratio (IC) has with a mean value of 2.553. This result indicates that on average the sample banks are more capable to meet their interest obligations from operating earnings and also indicates that banks in Ethiopia are having less burdens of interest expenses.

The standard deviation of interest coverage ratio (IC) of sample banks under this study is 2.902, which implies that banks are able to cover their interest payments with their EBIT in a regular manner.

As it is shown in table 4.1 above, the control variable in this study was bank size and tangibility. Which have a mean values of 22.73 and 0.022 respectively and a maximum values of 24.46 and 0.064 respectively. whereas; the minimum values were 19.6 and 0.007 respectively.

In addition, the standard deviation of the bank size and tangibility were 0.978 and 0.013 respectively. This implies that in the study period the sample commercial banks on average have a variation in their total asset and fixed asset respectively.

This study considers inflation as a macro-economic factor, general inflation rate, had a high standard deviation of 11.5 % this implies that inflation rate in Ethiopia during the study period remains unstable. The mean value of the general inflation rate of the country over the past nine years was 15.3 %. Whereas; the maximum and minimum values of inflation were 36.4% and 2.8% respectively.

#### 4.2. Correlation Analysis

Correlation and regression analyses are related in the sense that both deal with relationships among variables. The correlation coefficient is a measure of linear association between two variables. Values of the correlation coefficient are always between -1 and +1 ( Rodgers and Nicewander, 1988). A correlation coefficient of +1 indicates that two variables have strong relationship in a positive linear sense; while a correlation coefficient of -1 indicates that two variables are perfectly related in a negative linear sense. A correlation coefficient of 0, on the other hand, indicates that there is no linear relationship between the two variables.

The correlation coefficient measures only the degree of linear association between two variables. The analysis of the relationship between dependent variables (ROA, ROE) and independent variables (TDA, TDE, IC, TANG, SIZE and INF ) is detailed in Table 4.2 as follows using the correlation matrix.

	TDA	TDE	IC	SIZE	TANG	INF
ROA	0.17369	0.06057	0.63408	0.29972	-0.30613	-0.09740
ROE	0.61947	0.55174	0.66602	0.43152	-0.37708	-0.09215

Table 4. 2 Correlation coefficient among variables

Source: Annual report of sample banks computed using EViews 8

This study had calculated correlation of dependent variables with the independent, control and macro economic variables. As indicated above in table 4.2 TDA, TDE, IC and SIZE have positive

correlation with ROA and ROE. However; there exist negative correlation between TANG and INF with the dependent variables ROA and ROE.

### 4.3. Classical Linear Regression Model (CLRM) Assumptions and Diagnostic Test

In this section the five most critical assumptions related to classical linear regression model (CLRM) tests were conducted to make the data ready for regression analysis. These tests were proposed to check whether the CLRM assumptions are violated or not. Accordingly, the following sub-section presents tests of CLRM assumptions:

#### 4.3.1. Test for average value of the error term is zero ( $E(u_t) = 0$ ) assumption

The first assumption required is that the average value of the errors is zero (Brooks, 2008). In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term was included in the regression equation, the average value of the error term in this study is expected to be zero.

#### 4.3.2. Test for Heteroskedasticity assumption( $var(u_t) = \sigma^2 < \infty$ )

As indicated by (Brooks, 2008), this assumption requires that the variance of the errors to be constant. If the errors do not have a constant variance, it is said that the assumption of homoscedasticity has been violated. This violation is termed as Heteroskedasticity. In this study white's test was used to test for existence of Heteroskedasticity across the range of explanatory variables for both ROA and ROE independently.

$H_0$ : The variance of the error is homoscedasticity

Heteroskedasticity Test: White

F-statistic	0.136777	Prob. F(8,81)	0.9973
Obs*R-squared	1.199592	Prob. Chi-Square(8)	0.9966
Scaled explained SS	4.077557	Prob. Chi-Square(8)	0.8501

Table 4. 3 Heteroskedasticity Test for ROA

Heteroskedasticity Test: White

F-statistic	1.637697	Prob. F(8,81)	0.1270
Obs*R-squared	12.53052	Prob. Chi-Square(8)	0.1291
Scaled explained SS	10.61106	Prob. Chi-Square(8)	0.2247

Table 4. 4 Heteroskedasticity Test for ROE

Source: - annual report of sample insurance computed using E-views 8

In this case, both the F- statistic and R-squared versions of the test statistic give the same conclusion that there is no evidence for the presence of Heteroskedasticity for the dependent variables ROA and ROE, since the p-values are considerably in excess of 0.05 and also the third version of the test statistic, 'Scaled explained SS', which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, suggests also that there is no evidence of Heteroskedasticity. Thus, the conclusion of the tests have shown that no evidence of Heteroskedasticity and the null hypothesis is not rejected.

**4.3.3. Assumption three: covariance between the error terms over time is zero ( $cov(u_t, u_j) = 0$ )**

This assumption stated that the covariance between the error terms over time (or cross sectionals, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are auto correlated or that they are serially correlated (Brooks, 2008).

The study used both Durbin-Watson (DW) and Breusch-Godfrey test for the existence of autocorrelation for the two dependent variables ROA and ROE independently. The lagged value of variables is used in this research in order to adjust the autocorrelation. As per Brooks (2008) lagged value is simply the value that the variables took during a previous period. So from the regression result DW is 2.0096 and 1.9918 for ROA and ROE respectively which are closed to two.

Furthermore; Breusch-Godfrey test was conducted to check the existence of autocorrelation for the two variables independently.

Breusch-Godfrey Serial Correlation LM Test:

---

F-statistic	1.510651	Prob. F(2,79)	0.2271
Obs*R-squared	3.315203	Prob. Chi-Square(2)	0.1906

Table 4. 5 Breusch-Godfrey Serial Correlation LM Test: ROA

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.624168	Prob. F(2,79)	0.0788
Obs*R-squared	5.606643	Prob. Chi-Square(2)	0.0606

Table 4. 6 Breusch-Godfrey Serial Correlation LM Test: ROE

Source: - annual report of sample bank computed using EViews 8

The above tables 4.5 and table 4.6 show test of autocorrelation after inclusion of lagged variable and p value is greater than 0.05 and which indicates that absence of autocorrelation for both ROA and ROE.

#### 4.3.4. Assumption four: normality (errors are normally distributed ( $ut \sim N(0, \sigma^2)$ ))

(Brooks, 2008) stated also that if the residuals are normally distributed, the histogram should be bell-shaped and the Jarque-Bera statistic would not be significant. That is, the p-values given at the bottom of the normality test screens should be greater than 0.05 to not reject the null hypothesis normality at the 5% significant level. But in this case the problem of Normality is not existed since the p- value 0.566 and 0.616 for ROA and ROE respectively which is much more greater than 0.05.

In addition, it is quite often the case that one or two very extreme residuals cause a rejection of the normality assumption. Such observations would appear in the tails of the distribution, which enters into the definition of kurtosis, to be very large. Such observations that do not fit in with the pattern of the remainder of the data are known as outliers. If this is the case, one way to improve the chances of error normality is to use dummy variables (Brooks, 2008). Hence, the study included three dummy variables ( DUM1009,DUM1011 and DUM 809) to adjust the normality distribution. Thus, the figure below shows the result of normality by including three dummy variables.

$H_0$ : Error term is normally distributed

Based on the statistical result, the study failed to reject the null hypothesis of normality. It is confirmed that there is no problem of normal distribution of the error terms.

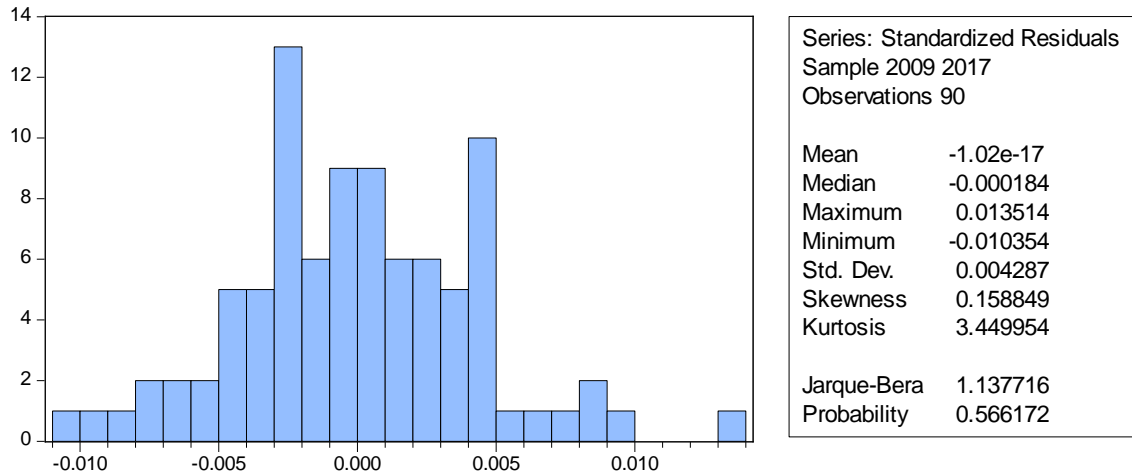


Figure 0-1 Dependent Variable ROA

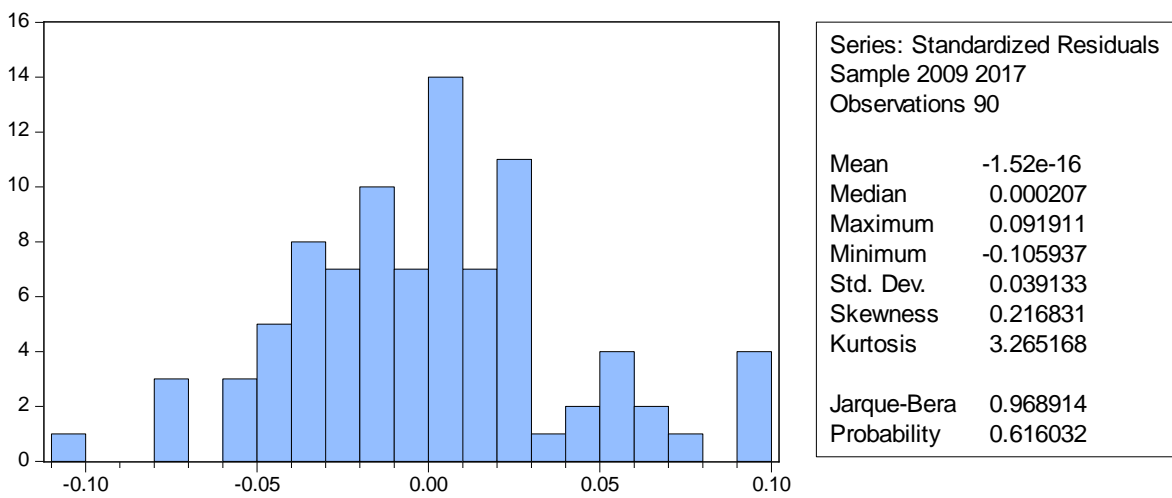


Figure 0-2 Dependent Variable ROE

The diagram witnesses that normality assumption holds the coefficient of kurtosis were 3.44 and 3.265 which close to 3, skewness were 0.158 and 0.216 which are close to zero. These imply that the data were consistent with a normal distribution assumption. Based on the statistical result, the study failed to reject the null hypothesis of normality.

### 4.3.5. Multicollinearity Test

This assumption is concerned with the relationship exist between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brooks 2008). There is no clearly defined and consistent argument reached by the scholars for the existence of multicollinearity problem among the explanatory variables. Consequently,(Malhotra et.al, 2013) (Cameron and Trivedi, 2005) ,and (Brooks, 2008) argued that there is no series multicollinearity problem if correlation coefficient is below 0.75,0.9 and 0.8 respectively. Thus, the study taken the minimum of those scholars parameter of correlation coefficient among independent variables should be below 0.7.

	IC	INF	SIZE	TANG	TDA	TDE
IC	1					
INF	-0.173694	1				
SIZE	0.323200	-0.374688	1			
TANG	-0.282779	-0.129327	0.226105	1		
TDA	0.471512	-0.170300	0.514466	-0.077889	1	
TDE	0.221776	-0.106773	0.434555	-0.105296	0.916779	1

Table 4. 7 Test for Multicollinearity

Source: - annual report of sample bank computed using EViews 8

As shown above in table 4.7, there is multicollinearity problem among the explanatory variables as the maximum correlation coefficient is 0.917 involved between TDA and TDE.As a result the researcher excludes TDE for the regression model in order to solve multicollinearity. Table 4.8 shows the final result of multicollinearity by excluding TDE.

	IC	INF	SIZE	TANG	TDA
IC	1				
INF	-0.173694	1			
SIZE	0.323200	-0.374688	1		
TANG	-0.282779	-0.129327	0.226105	1	
TDA	0.471512	-0.170300	0.514466	-0.077889	1

Table 4. 8 Adjusted Multicollinearity result

Source: - annual report of sample bank computed using EViews 8



## 1 Model Selection (Random Effect versus Fixed Effect Models)

As stated in (Brooks, 2008), in financial research, there are two major classes of panel estimator approaches that can be employed. Namely, the fixed effects model and random effects model. In order to select the appropriate model which provide consistent estimates for this study, Hausman test was employed.

$H_0$ : Random effects model is appropriate

Correlated Random Effects - Hausman Test

Equation: EQ01

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.952514	5	0.3109

Table 4. 9 Test cross-section random effects (ROA)

Correlated Random Effects - Hausman Test

Equation: EQ01

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.491131	5	0.2613

Table 4. 10 Test cross-section random effects (ROE)

Source: Financial statements of sample banks and EViews computation

Table 4.9 and 4.10, presents the Hausman specification test which suggests the random effect models was better than fixed effects model as the p-values (0.3109) and (0.2613) for ROA and ROE respectively, are greater than 0.05. Which imply that the null hypothesis should not be rejected and thus, the analysis is based on the random effects estimates.

Dependent Variable: ROA  
Method: Panel EGLS (Cross-section random effects)  
Date: 05/26/18 Time: 11:48  
Sample: 2009 2017  
Periods included: 9  
Cross-sections included: 10  
Total panel (balanced) observations: 90  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.060318	0.017392	3.468156	0.0008
IC	0.001745	0.000199	8.756665	** 0.0000
INF	0.012248	0.004311	2.841533	** 0.0057
SIZE	0.001914	0.000737	2.596237	* 0.0112
TANG	-0.156470	0.045475	-3.440754	** 0.0009
TDA	-0.092413	0.018158	-5.089379	** 0.0000
DUM809	-0.061614	0.004431	-13.90405	0.0000
DUM1009	-0.039210	0.004784	-8.195710	0.0000
DUM1011	0.021898	0.004341	5.044074	0.0000

Effects Specification		S.D.	Rho
Cross-section random		0.001499	0.1178
Idiosyncratic random		0.004102	0.8822

Weighted Statistics			
R-squared	0.855187	Mean dependent var	0.017508
Adjusted R-squared	0.840884	S.D. dependent var	0.010477
S.E. of regression	0.004179	Sum squared resid	0.001415
F-statistic	59.79262	Durbin-Watson stat	1.762952
Prob(F-statistic)	0.000000		

Table 4.11 Regression Result (ROA)

Source: Financial statements of sample banks and EViews computation

**N.B:- \*\*and \* indicate that significant at 1% and 5% significance level respectively**

Dependent Variable: ROE  
Method: Panel EGLS (Cross-section random effects)  
Date: 05/26/18 Time: 19:40  
Sample: 2009 2017  
Periods included: 9  
Cross-sections included: 10  
Total panel (balanced) observations: 90  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.545884	0.155175	-3.517850	0.0007
IC	0.008051	0.001790	4.498443	** 0.0000
INF	0.083797	0.038736	2.163310	* 0.0335
SIZE	0.013284	0.006507	2.041419	* 0.0445
TANG	-1.586403	0.408125	-3.887053	** 0.0002
TDA	0.521300	0.164953	3.160301	** 0.0022
DUM809	-0.159284	0.039736	-4.008550	0.0001
DUM1009	-0.192674	0.042874	-4.493941	0.0000
DUM1011	0.138425	0.038931	3.555694	0.0006
33				

Effects Specification		S.D.	Rho
Cross-section random		0.014008	0.1267
Idiosyncratic random		0.036771	0.8733

Weighted Statistics			
R-squared	0.741183	Mean dependent var	0.132645
Adjusted R-squared	0.715621	S.D. dependent var	0.071087
S.E. of regression	0.037909	Sum squared resid	0.116402
F-statistic	28.99531	Durbin-Watson stat	1.794706
Prob(F-statistic)	0.000000		

Table 4.12 Regression Result (ROE)

Source: Financial statements of sample banks and EViews computation

**N.B:- \*\*and \* indicate that significant at 1% and 5% significance level respectively.**

Thus, based on the result in the above Tables 4.11 and 4.12, the following model was developed to examine the effect of capital structure on profitability of private commercial banks.

$$ROA = 0.0603 - 0.0924TDA + 0.0017 IC + 0.0019SIZE - 0.1564TANG + 0.0122INF + \varepsilon$$

$$ROE = -0.5458 + 0.5213TDA + 0.0080IC + 0.0132SIZE - 1.5864TANG + 0.0837INF + \varepsilon$$

This section discusses in detail the analysis of the results for each explanatory variable and their effect on Ethiopian private commercial bank's profitability. Furthermore, the discussion analyzed

the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the interpretation on the Random effects model regression results.

P-value indicates at what percentage or precession level of each variable is significant . The R-squared value measures how well the regression model explains the actual variations in the dependent variable (Brooks, 2008). R-squared statistics and the adjusted- R squared statistics of the model was 85.5% and 84% for ROA,74.1% and 71.5% for ROE respectively. The adjusted R2 values 84% and 71.5% indicates that the dependent variables return on asset (ROA) and return on equity (ROE) of Ethiopian private banks were well explained by the independent variables that are listed in the model. Thus, these variables collectively are good explanatory variables to identify the effect of capital structure on private commercial banks profitability in Ethiopia. The regression F-statistic (59.7926) and (28.9953) for ROA and ROE respectively with a p-value of zero for both ROA and ROE attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the two models were able to explain variations in the dependent variables respectively.

The coefficient of variables starts from the constant variable; it shows that the effect of capital structure on profitability of private commercial banks of Ethiopia will have a constant amount of 0.0603 and -0.5458 for ROA and ROE respectively if other factors remain constant.

The coefficient for TDA is -0.0924 on ROA which indicates that the total Debt to asset ratio had negative relationship with ROA and also the relationship is significant at 1% level of significance. And also, the coefficient for IC is 0.0017 on ROA which refers that interest coverage ratio had positive and significant relationship with ROA at 1% level of significance. Next to this, the coefficient for SIZE is 0.0019 on ROA which refers that size of banks had Positive and significant relation with ROA at 5% level of significance. In addition, the coefficient of TANG is -0.1564 on ROA which refers that tangibility of assets had negative and significant relation with ROA at 1% level of significance. Finally, the coefficient of INF is 0.0122 on ROA which refers that inflation had Positive and significant relation with ROA at 5% level of significant

The coefficient for TDA is 0.5213 on ROE which indicates that the total Debt to asset ratio had positive relationship with ROE and also the relationship is significant at 1% level of significance. And also, the coefficient for IC is 0.0080 on ROE which refers that interest coverage ratio had positive and significance relation with ROE at 1% level of significance. Next to this, the coefficient for SIZE is 0.0132 on ROE which refers that size of banks had Positive and significant relation with

ROE at 5% level of significance. In addition, the coefficient of TANG is -1.5864 on ROE which refers that tangibility of assets had negative and significant relation with ROE at 1% level of significance. Finally, the coefficient of INF is 0.0837 on ROE which refers that inflation had Positive and significant relation with ROE at 1% level of significance.

The positive relationships indicate that there is a direct relationship between the three independent variables and ROA, and four independent variables and ROE respectively. The increase of this variables lead to an increase in ROA and ROE of Ethiopian private commercial banks respectively. On the other hand, the negative relationships indicate that there is an inverse relationship between the two independent variables and ROA, and one independent variable and ROE. Thus the increase of those variables will lead to a decline in ROA and ROE's of Ethiopian private commercial banks respectively.

#### **4.4. Discussion of Regression Result**

The previous sections of the chapter presented the overall results of the study. Hence, this section presents the discussion of the detail analyses of the results for each explanatory variable and their impact on profitability of private banks. Moreover, the discussion evaluates the statistical findings of the study in relation to the previous empirical evidences. Thus, the following discussions findings present the relationship and effect of explanatory variables on profitability.

##### **Total Debt to Asset Ratio:**

The result of random effect model table 4.11 and 4.12 indicates that capital structure as measured by total debt to asset had negative and positive relationship with ROA and ROE respectively, and statistically significant (p-value = 0.0000) and (p-value = 0.0022) respectively at 1% level, and the result was in accordance with the expected sign for ROE but it is different for ROA. As a result, the null hypothesis.

H1: Debt to asset ratio has positive and statistically significant effect on profitability measured by ROA of private commercial banks of Ethiopia was rejected. This implies that holding other factors constant for every 1 unit (birr) increase in bank's capital structure (Total Debt to asset ratio), profitability (ROA) of banks declines by 9 cents (Coeff. = -0.0924) and the relationship is statistically significant at 1% level of significance.

This result also indicates that debt financing has a negative impact on profitability of the Ethiopian private banking sector. The possible reason for this result could be that the cost (interest expense)

associated with debt financing through non-deposit sources are expensive in the context of Ethiopia banking business operations/ environment.

This is explained by the fact that debts are relatively more expensive than equity, and therefore employing high proportions of them could lead to low profitability. The results support part of earlier findings by (Fama and French, 2002), (Fawzi et.al, 2012), (Muhammed et.al., 2015) and (Aragaw, 2015).

The second null hypothesis tested in this study was :

H2: Debt to asset ratio has positive and statistically significant effect on profitability measured by ROE of private commercial banks in Ethiopia was not rejected and the result was in accordance with the expected sign. This implies that holding other factors constant for every 1 unit (birr) increase in bank's capital structure (Total Debt to asset ratio), banks profitability (ROE) increase by 52 cents (Coeff. = 0.5213) and the relationship is statistically significant at 1% level of significant.

The result of the regression analysis indicates that leverage has a positive effect on the financial performance of private banks measured by ROE which is consistent with the findings of (Muhammed et.al., 2015) and (Gill et.al., 2011).

### **Interest Coverage Ratio**

The results of Random effect model in table 4.11 and 4.12 shows that the relationship between interest coverage ratio and profitability was positive and statistically significant (p-value = 0.0000) for both ROA and ROE, even at 1% significant level.

H5: Interest coverage ratio has positive and statistically significant effect on profitability measured by ROA of private commercial banks of Ethiopia.

H6: Interest coverage ratio has positive and statistically significant effect on profitability measured by ROE of private commercial banks of Ethiopia. As a result, the two null hypothesis were not rejected and results was in accordance with the expected sign for both ROA and ROE.

This implies that holding other factors constant for every 1 percent increase in interest coverage ratio, banks profitability (ROA and ROE) increase by 0.18% (Coeff. = 0.001745) and 0.8% (Coeff. = 0.008051) and the relationship is statistically significant at 1% and 5% level of significant. whereas, the positive relationship indicates private banks in Ethiopia borrow the fund by low cost.

This significant positive relationship between interest coverage ratio and profitability is consistent with the findings of previous research (Tamrat, 2015) and (Khalid et al 2013).

### **Size**

The result of random effect model of table 4.11 and 4.12 reveals that banks size had positive relationship with profitability and statistically significant (p-value = 0.0445 and 0.0112) for both ROA and ROE at 5% significant level.

This implies that holding other factors constant every 1% change in the banks size, increases profitability of private banks by 0.19% and 0.13% (Coeff. = 0.001914) and (Coeff. = 0.00132) which is measured by ROA and ROE respectively and the relationship is significant at 5% significant level.

The results also indicates that the bigger the bank, the more profitable. The possible reason is that, the larger the bank, the more economics of scale, the more diversified with branch layout, the lower risk and the stable cash flows hence more profitable as well.

The results were in consistent with the findings of previous researches of (Aragaw, 2015), (Muhammed et.al., 2015) and (Tariku, 2016) but in contrast with the result of (Mathewos, 2016)

### **Tangibility**

The result of random effect model of table 4.11 and 4.12 reveals that tangibility of assets had a negative relationship with profitability and statistically significant (p-value = 0.0009 and 0.0002) for both ROA and ROE at 1% level of significance.

This implies that holding other factors constant every 1 unit in birr change in tangibility of assets, declines profitability of private banks by 0.16 cents and 1.58 birr (Coeff. = 0.1564) and (Coeff. = 1.5864) which is measured by ROA and ROE respectively and the relationship is significant at 1% significant level. This result implies that banks with a high ratio of total fixed asset to total asset have a lower performance ratio, which implies that banks invest too much in fixed assets in a way that does not reward their investment, or it implies that they do not use their fixed assets efficiently.

The results were in consistent with the findings of previous researches of (Mathewos, 2016) and in contrast with (Tariku, 2016).

### **Inflation**

The result of random effect model of table 4.11 and 4.12 reveals that inflation of the country had a positive relationship with profitability and statistically significant (p-value = 0.0335 and 0.0057) for both ROA and ROE at 1% and 5% level of significance respectively.

This implies that holding other factors constant every 1% change in inflation of the country, increases profitability of private banks by 0.12% and 0.83% (Coeff. = 0.01224) and (Coeff. = 0.08379) which is measured by ROA and ROE and the relationship is significant at 1% and 5% significant level respectively. The results were in consistent with the findings of previous researches of (Abdul et.al., 2012).



## CHAPTER FIVE

### 5. CONCLUSION AND RECOMMENDATION

The preceding chapter discusses about the results and finding of the study while this chapter deals 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.

#### 5.1 Conclusion

The main objective of this study was to examine the effect of capital structure on profitability of private commercial banks in Ethiopia.

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 sample of nine banks over the time period from 2009-2017. The study used random effect regression model using statistical package EVIEW 8 to estimate the effect of capital structure on bank profitability measured by ROA and ROE.

The mean value 6.673 shows that during the study period the sample banks finance their capital structure by using 667% debt in their capital structure. It also revealed that on average banks in Ethiopia are using more debt than equity financing. The ratio shows on average 6.673 times more debt than equity capital in the banks' capital structure. The result indicates that banks in Ethiopia use more debt financing than equity financing.

The adjusted  $R^2$  values 84% and 71.5% indicates that the dependent variables return on asset (ROA) and return on equity (ROE) of Ethiopian private banks were well explained by the independent(explanatory) variables. Thus, reveals that profitability was explained by the adjusted  $R^2$  values but the remaining 16% and 28.5 % was influenced by other factors.

The findings of the study shows that TDA and TANG have negative and statistically significant effect on ROA at 1% significant level. Whereas; IC,SIZE and INF have positive and statistically significant effect on ROA at 1% ,5% and 1% significant level respectively.

The findings of the study also shows that TANG has negative and statistically significant effect on ROE at 1% significant level. While; TDA, IC, SIZE and INF have positive and statistically significant effect on ROE at 1% ,1% ,5% and 5% significant level respectively.

Finally; the research concluded that capital structure has a significant effect on the profitability of Ethiopian private commercial banks.

## **5.2 Recommendations**

Based on the findings obtained from the results, the study suggests the following recommendations;

- Total debt to asset ratio (TDA) have negative and significant effect on profitability (ROA) So, private commercial banks of Ethiopia should focus on the proportion of debt and equity used in their capital structure to attain a maximum profit with a minimum cost of capital to minimize financial distress costs.
- Total Debt to asset ratio (TDA) has positive and significant effect on profitability (ROE) So, private commercial banks of Ethiopia should focus on the proportion of debt and equity used in their capital structure.
- Tangibility has negative and statistically significant effect on both ROA and ROE of private commercial banks So, the banks can improve their profitability by utilizing their resources and investments on fixed asset effectively.
- Interest coverage ratio, Size and inflation have a positive and significant effect on profitability for both ROA and ROE So, the banks try to expand their branches in order to diversify their risk, mobilize deposit and meet the customers demand.
- Banks try to proportionate their debt and equity mix to maximize their profit and to attain optimal capital structure and firm value.
- Management of private banks of Ethiopia should try to make a right decision by considering the effect of each capital structure variables on their profitability.
- NBE as a controller and regulator of financial institutions of the country, should make regulatory policy to raise the limit of capital requirement .
- Policy makers of the country should try to establish stock market in the country to create a good opportunity for banks to compete very well in the industry market as well as to increase their firm value and equity financing.

- Finally, the researcher recommend for future researchers to use more number of observations. Thus, in order to come up with a better comprehensive results larger sample size and other proxies of capital structure such; asset to total fund ratio and debt to equity ratio and also macro level factors such as GDP and interest rate shall be captured in the model and other measures of profitability such as NIM, operating margin and earning per shares can be used to develop additional model.

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