
**ST MARY'S UNIVERSITY**

**SCHOOL OF GRADUATE STUDIES**

# THE IMPACT OF CAPITAL STRUCTURE ON PROFITABILITY OF COMMERICAL BANKS IN ETHIOPIA

**BY: DAWIT ABERA**

**ID.NO.SGS/0477/2011A**

**JUNE, 2020**

**ADDIS ABABA, ETHIOPIA**

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**A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION IN ACCOUNTING AND FINANCE**

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**APPROVED BY BOARD OF EXAMINERS**

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# Declaration

I, the undersigned declare that this thesis is my original work, prepared under the guidance of Simon Tareke (Ass. Prof.). All source of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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| Name | Signature |
| St. Mary's University College, Addis Ababa, | June, 2020 |

## Endorsement

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

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| St. Mary's University, Addis Ababa | Date June, 2020 |

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## List of Abbreviations/Acronyms

AIB - Awash international bank

BIB - Birhan International bank

BIB - Buna International bank

BOA- Bank of Abyssinia

CBE - commercial bank of Ethiopia

CLRM - Classical Linear Regression Model

CS - Capital Structure

DB - Dashen Bank

DAR - Debt to Asset Ratio

DER - Debt to Equity Ratio-

EPS - Earning Per Share

ICR - Interest Coverage Ratio

LD - Loan to Deposit

LIB - Lion International bank

NBE - National Bank of Ethiopia

NIB -Nib international bank

NIM - Net Interest Margin

OIB - Oromia international bank

ROA - Return on Assets

ROE – Return on Equity

UN - United bank

WB - Wegagen bank

WBR - World Bank Report

ZB - Zemen Bank

***Abstract***

*This study attempts to find out the compositions of capital structure and their relationship with the profitability of commercial Banks in Ethiopia. The study used a six years (2012-2018) panel data of a sample of twelve commercial banks as a major data input. By employing an explanatory research design, the study mainly tried to investigate the relationship between capital structure and profitability using a dependent variable (ROA), independent variables: debt to equity ratio (DER), debt to asset ratio (DAR), loan to deposit (LD) and interest coverage ratio (ICR) and control variables: bank size, spread and growth. After the raw were collected and processed, results were computed, analyzed and presented using panel data analysis, descriptive statistics and correlation analysis methods and fixed effect regression output model. To check the validity of the research method and results CLRM and Hausman specification tests were conducted. The findings have shown that the capital structure of the sampled commercial banks was composed of more debt (86.31 %) than equity. The regression analysis results have revealed that DER had negative and statistically significant impact on ROA at 1% significant level where as DAR, ICR AND SIZE had positive and statistically significant effect on ROA at 1%, 5% and 1% significant levels respectively. The study has also revealed a positive relation between DAR and profitability and DAR was found to be a significant variable in influencing the profitability of commercial banks in Ethiopia. On the other hand, LD, spread and growth had a similar negative but insignificant relation with profitability. The study concludes that capital structure had a significant impact on the profitability of commercial banks in Ethiopia and recommends that to become more profitable and attain optimal capital structure and firm value the commercial banks in Ethiopia should use tax exempted amount as an additional re-investment opportunity, maintain the right proportion of debt and equity in capital structure and give greater attention to the variables: DER, DAR, ICR and SIZE which were found to be strongly related to their performance.*

*Keywords: Capital Structure, Pofitability, Return on Asset, Debt to Asset Ratio, Debt to Equity Ratio, Interest Coverage Ratio and Firm Size*

# CHAPTER ONE
# INTRODUCTION

## 1.1. Background of the study

In today 's highly capitalistic global economy the financial sector is one of the sectors that play a substantial role by serving as the source, the means and the facilitating agent of the flow of finance and capital in business, investment or any other activity done at different levels. And, as a result of an increasing spate of globalization and an equally increasing dependence on it, the global financial sector became fiercely competitive (Anarfo & Appiahene, 2017). Banking being a major form of financial service provides the means for access and exchange of capital which is a very important element of any economic activity.

Particularly in the developing countries of the world, the banking sector has a significant role to play in that without it realizing any goal to build economic capacity, generate new capital and ensure a multifaceted development will be a very difficult job. (Siddik et al., 2017). Regarding the growth and current status of the banking sector in sub-Saharan African countries, Anarfo & Appiahene (2017) citing Beck & Cull (2013) state that the sector has undergone significant changes. The changes have been positive such as accelerated growth and expansion of access to financial services and also negative like the introduction of tough regulations and the recessionary effects of the global credit crunch. Anarfo & Appiahene add that in an attempt to cope with these challenges and boost their profitability the banks had to expand their network and client base.

In addition to high competition, like the other sectors, the banking and finance sector is characterized by the introduction of technology based and other innovative services aimed at surviving long in the business and maximizing profit since this is one of the primary objectives of any firm. As the success or failure of the banking and finincial institutions directly or indirectly impacts the economic and social wellbeing of the people of a country, it is vital to address issues such as capital structure, profitability, performance and overall efficiency (Anarfo & Appiahene, 2017).

While underlining the need to adress the above mentioned issues , it is also important to note the following three points. One the concept of capital structure and its relation with performance and

profitability have been highly controversial. Two, even though banks all over the world share a lot of similarities, there are some country - specific situations that must be considered while conducting studies on this topic. Three ,as the banking sector is fundamentally different from any other sector of the market in terms of high leverage and regulation, the results obtained from research using data across other sectors in the market need not to be carried over to the banking sector (Ronoh & Ntoiti, 2015).

In general as Tuncay (2018) citing Gill et al. (2009), Shubuta and Alsawalhah (2012) states, among the different factors that could positively or negatively affect the performance of banks, one is capital structure. Tuncay adds that "capital structure is very important to users of financial information, such as: shareholders, creditors, investors, regulators, analysts and other stakeholders." As has been stated by Tuncay above and also according the views of other researchers and scholars the importance of capital structure as a financial information lies in the fact that one, it may affect the performance of the firms and two it serves as an input for the management and shareholders of a banking firm so that they make strategic decisions that would help them achieve their goals and objectives. In this vein Siddik et al. (2017) also say that it is this importance of information about capital structure in the performance of a firm that led many researchers to inspect the rapport of capital structure with the performance of firms.

The fact that quite a lot of studies have been conducted on the topic of capital structure is also indicative of its importance as an aspect of banking business and financial information. Though there are differences in their point of emphasis, most scholars and researchers have provided similar definitions for capital structure. For example according to Siddik et al. (2017), Drake (n.d,) capital structure refers to the mode of finance usually that blend or combination of loan or debt and equity capital through which a firm or its projects and activities are financed.

With all the differences in approach and point of emphasis there has been consensus in the financial literature about the importance of capital structure. In this regard among the major points that scholars and researchers addressed, one is the relationship between capital structure and profitability and particularly whether capital structure has any impact or not on the performance and profitability of commercial banks. In explaining the matter and in providing a research perspective, Monga (2018) for example hold that the decision business firms make on

capital structure can have a positive or negative impact on their profitability depending on whether that decision is an appropriate one or not. Hence according to Monga and others who share this view, companies need to select optimal type of capital structure in order that they become profitable and get positive results in their business activities. Optimal capital structure is the one with the best proportion of debt and equity which results in the maximization of the firm's value and the reduction of its overall cost of capital.

As has been said above, the choice of capital structure is one of the key strategies and major financial decisions of firms. However, it has been the subject of substantial debate and investigation among scholars and there are still debates on what drives capital structure decision and the impact it will have on profitability. What is more, the findings of empirical studies provide inconsistent results on the relationship between capital structure and profitability of a firm. The arguments made in the major theories of capital structure namely: Modigliani and Miller, trade off theory, pecking order theory, capital structure substitution theory, market timing theory and the agency theory is indicative of this controversial nature.

And among the studies conducted, some have found positive relation, others negative and some others no relationship between capital structure and the profitability of commercial banks. This controversial nature partly emanates from the fact that capital structure depends upon various factors like: business risk of the company, tax situation of the company, degree to which the company's assets are tangible, company's corporate governance and transparency of the financial information.

The role of different factors also works for the concept of profitability which in addition to capital structure depends on other factors such as the firm's investment opportunities with various forms of combinations for example using the total debt, equity, or a combination of debt and equity. Be that as it may it is crucial to further study the relationship between capital structure and profitability since profitability is one of the important criteria for the survival and growth of companies. It is a very important variable for a firm because, when a firm's profitability is high and regular, only then the lenders, shareholders and the investors will show interest in that firm.

Banking started in Ethiopia in 1905 with the establishment of the bank of Abyssinia owned by the Ethiopian government in partnership with the national bank of Egypt. But it was after 1940 's particularly following the establishment of a government owned bank in 1942 and the opening of a number of foreign bank branches that a well-structured banking system started to evolve in the country. The new government that came to power in 1974 nationalized all the foreign bank branches and merged them into one government owned mono bank in 1976. Even though the construction and business bank and development bank continued to operate during the command economy system from 1974/76 until 1991, the commercial banking sector was almost fully dominated by commercial Bank of Ethiopia (CBE) which is still the largest bank in terms of capital and number of branches. Following the subsequent measures taken in liberalizing and deregulating the financial sector, notably the introductions of the proclamation 84 /94, a number of private banks were established (Gashayie & Singh 2016).

The commercial banking sector especially that of private banking service has shown growth in terms of the number of banks, capital and service scope. However there have also been challenges that the sector faced. For example World Bank Report [WBR] (2018) citing World Bank Enterprise Survey [WBR] (2015) says that Ethiopia's financial system is characterized by shallowness and inability to serve the needs of a transforming economy well. According to the report the development of the financial sector is also challenged by poor access to finance. In general to ensure a better performance of the financial institutions and realize development in the sector, it is necessary that the strengths and challenges of the financial sector in Ethiopia be identified and ideas recommended.

## 1.2. Statement of the Problem

As has been mentioned in the background section above the financial sector plays a significant role in assisting the multifaceted development of especially the developing countries of the world. The same is true for Ethiopia which is a developing country that has shown notable economic growth but still challenged by macro and micro economic factors which have been evident in the financial sector too. As Zinabu (2019) also argues if managed appropriately, the financial sector, by extricating the people from poverty, has the potential to facilitate and fuel capital development. Therefore in order to get the best out of this sector due attention should be given to the work of identifying its challenges and prospects.

Even though there have been positive changes in the commercial banking sector of Ethiopia following the introduction of the new 84/94 proclamation, a number of challenges have also been hindering the sector's development. In relation to this WBR (2018) also maintains that the banking system in Ethiopia provides a limited range of traditional financial products and services with mobile money or other fine tech innovations virtually absent in the market. By noting the reform projects the government of Ethiopia of asset quality review that assesses loan and asset portfolio quality the report says that addressing the constraints within the banking system will also help shift more credit supply towards private sector development.

In this regard one of the aspects that need to be addressed is the possible impact of capital structure on the profitability of commercial banks. Even though it is one of the widely studied topics in world financial literature, no consensus is reached and no definite explanation is given by neither scholars nor esearchers. This lack of consensus has been exhibited in the contrasting findings of the studies in that according to some capital structure has an impact on profitability of commercial banks while the results of other studies revealed no such impact of capital structure on profitability.

For example a research by Marandu & Sibindi (2016) is one of the studies conducted on the topic of capital structure and its impact on profitability on the commercial banks of South Africa. The study found out that there was significant relationship between profitability and the determinants of capital. Another study by Singh & Bagga (2019) found out a similar result that there was a significant positive relationship between capital structure and profitability. Another study by Samuel ( 2016) conducted among selected commercial banks in Kenya revealed that even though its effect was minimal; capital structure affected the profitability of commercial banks in Kenya. Among the studies conducted in Ethiopia, the one by Negasa (2016) also showed that there was positive relationship between capital structure and profitability.

On the other hand, studies conducted by other researchers on the same topic revealed contrasting results. For example the findings of two studies one by Anarfo (2015) and the other by Mututa (2016) showed that capital structure did not determine bank performance rather it was capital structure that depended on bank’s performance. A study by Sidik, Kabiraj and Joghee (2017) is the other study that found out significant negative relationship between capital structure and

profitability which concluded that all capital structure variables had negative impact on ROA. Similarly a research conducted by Chang et al. (2019) found out that there was negative relationship between capital structure and profitability. In this vein another study by Ebaid (2018) among selected firms in Egypt also showed that capital structure had a weak-to-no impact on firm's performance.

The findings of studies conducted in Ethiopia further witnessed the prevalence of the inconsistency. For example Tigist (2018) concluded that measured by total debt to asset had negative and positive relationship with performance. According to Muhammed et al. (2015) capital structure had positive or negative association with performance. Hence further studies should be conducted on the topic. However as Gebremichael (2016) also stresses among the studies conducted in Ethiopia, most ( Woldemichael, 2012, Adugna, 2017 to name a few) dealt with the determinant factors of capital structure.

## 1.3. Research Questions

The study attempts to answer the following research questions:

- What form (composition) do the capital structures of selected commercial banks have?
- Has the capital structure of the sampled commercial banks had any impact on their profitability?
- Are there any variables of capital structure that have significant positive or negative impact on profitability?

## 1.4. Objectives of the Study

### 1.4.1. General objective

The general objective of the study is to find out the capital structure compositions of selected commercial banks and more importantly investigate whether the capital structures of these banks had any impact on their profitability.

### 1.4.2. Specific Objectives

The specific objectives of this study are:-

- Find out what capital structure compositions the sampled commercial banks have
- Examine if there is any relationship between the capital structures of the sampled commercial banks and their profitability
- Outline if there are any variables of capital structure that have a significant positive or negative impact on profitability

## 1.5. Research Hypothesis

To answer the above mentioned research questions the study formulated and tested the following four null hypotheses :

H1: There is no significant relationship between debt to equity ratio and profitability of commercial banks in Ethiopia.

Among the cross country studies for example the ones by Khalid etal (2013) and Enugu and Amorji (2014) found out a significant negative relationship between DER and profitability. Hypothesis 1 was formulated based on the findings.

H2: There is no significant relationship between debt to asset ratio and profitability of commercial banks in Ethiopia.

This hypothesis was formulated based on the results of studies by Argaw (2015) and Mohammed (2014) which revealed a statistically significant negative relation between DAR and profitability.

H3: There is no significant relationship between interest coverage ratio and profitability of commercial banks in Ethiopia.

The studies by Velampy and Niresh (2014 ) and Ebaid ( 2018) that showed no significant relation between all capital structure variables except the relation between DER and ROE were used to formulate this Hypothesis.

H4: There is no significant relationship between loan to deposit and profitability of commercial banks in Ethiopia.

This hypothsis was formulated based on the findings of researchs for example the ones conducted by Yigermal (2017 ) and Mathewos (2016 ) which showed a significant negative relation between LTD and profitability.

## 1.6. Significance of the Study

As has been mentioned earlier the commercial banking sector in Ethiopia has shown positive changes. However when compared with the pace of growth in other African countries, it is still in its infant stage. Therefore in order that the banks become more profitable and improve their overall performance, they need additional information about their capital structure and also whether it has had any impact on their profitability. The researcher strongly hopes that, one the findings of this study will help the managers to take clear financial decision for their firms. Two, by helping to minimize risks and become more effective , the findings of this study can also be beneficial to creditors and investors. Three it is also hoped that the findings of this study will serve as an additional input for policy makers

## 1.7. Scope of the Study

This study attempted to : find out the kind of capital structure compositions, investigate whether capital structure had any impact on the profitability and outline if there were any variables that had a significant positive and negative relation with the profitability of commercial banks in Ethiopia. To that end the study selected twelve commercial banks as a sample and took in their six years ( 2012 to 2018) annual reports published by the National Bank of Ethiopia (NBE) as a major data. The banks are : Commercial Bank of Ethiopia (CBE), Awash International bank (AIB), Dashen Bank (DB), bank of Abyssinia (BOA), Wegagen Bank (WB), United Bank (UB), Nib International Bank (NIB), Cooperative Bank of Oromia (CBO), Lion International Bank (LIB), Oromia International bank (OIB), Zemen Bank (ZB), Buna International Bank (BIB), Berhan International Bank (BIB).

The discussion of the topic and the research findings used only the assumptions of the five major theories of capital structure: the irrelevance, trade off, pecking order, agency and the market timing theories. Apart from finding out the capital structure compositions, the study tried to investigate if they had any relationship with the profitability of the banks. In addition the study attempted to outline if there were any variables that had a significant positive or negative relation with the profitability of the banks. However the study neither did a detailed analysis of any cause and effect relationship between the variables nor it attempted to find out an optimal form of capital structure.

## 1.8. Limitations of the Study

Capital structure and its relation with profitability has always been a very controversial topic. Even though an attempt was done to answer the research question well by using the most common variables, because of time and resource limitation the study had to be confined to a limited range of firm specific variables, sample size and also the period it covered. Lack of complete and diversified data on most aspects of modern commercial banking service in Ethiopia was the other limitation faced by the researcher. The corona pandemic has been an unprecedented challenge since the first case was reported in Ethiopia some months ago. After the government took measures to limit the movements and activities of the people, getting access to reference materials (especially libraries, internet café's etc.) and exchanging ideas by physically meeting friends was almost impossible at the beginning. An effort was done by the researcher to fill this gap by using telephone and other communication channels.

## 1.9. Organization of the Study

This research is organized in five chapters: Chapter one is the introduction part in which the background of the research, statement of the problem, objectives of the study, research questions, significance of the study, scope of the study and limitation of the study are presented. Chapter two presents review of theoretical and empirical literature on capital structure and profitability. Chapter three deals with the research methodology used in conducting the study. Chapter four and five present the results and discussion of the study and conclusions and recommendations respectively.

# CHAPTER TWO
# RELATED LITERATURE REVIEW

This chapter presents review of related literature. The review has three separate sections that deal with the conceptual, theoretical and empirical frameworks of the study. In the conceptual framework part the concept of capital structure, its elements and variables and the different views and arguments of scholars and researchers are dealt. In the theoretical and empirical review sections discussions of the five major theories of capital structure and the findings of studies conducted in other countries and in Ethiopia are presented respectively. In addition to these the chapter also has parts that deal with a textual and graphical presentation of the conceptual framework of this particular study and a brief discussion of the research and knowledge gap.

## 2.1. The Concept of Capital Structure

Capital structure is one of the major topics among scholars in cooperate finance. It is commonly defined as the mode of finance which entails the combination or mix of debt and equity (Drake , Siddik et al., 2017). While debt and equity are the major elements of capital structure the ability of the organization to carry out their stakeholders need is closely related to it. In this vein (Saad, 2010) by adding another element defines capital structure as "the way a firm finances its assets across the blend of debt, equity or hybrid securities." The other point worth mentioning here is that capital structure is an important decision of a firm and it is also something that has been controversial in nature.

### 2.1.1. Capital Structure as an Important Decision of a Firm

There is a widespread common view among most scholars and researchers in cooperate finance that capital structure is an important decision of a firm. In highlighting this point for example, Ahmad (2014 and Abeywardhana (2017) say that" the nature and composition of capital structure is one of the important aspects of a firm's performance. "

Similarly Siddik et al. (2017) by pointing out the focal point of researchers which is delineating the connection between capital structure and the performance of firms, hold that the decision of how a firm will be financed is subjected to both the managers of the firms and fund suppliers.

In explaining the reason why such decision on capital structure should be a careful one, Sidik et.al. add that if financing is done by employing an incorrect combination of debt and equity, a negative effect is seen in the performance and endurance of a firm because the use of leverage varies from one firm to another.

### 2.1.*2.* The Controversial Nature of the Topic of Capital Structure

As has been said previously though there are some aspects of capital structure that scholars and researchers in the field of finance share in common still the concept in general particularly optimal capital structure and the possible impact of capital structure have been so controversial. As Saheed et.al (2013) also note since optimal capital structure of an organization is a very hard thing to determine, firm's managements are facing difficulties in precisely determining the optimal capital structure. The other equally controversial point has been as to whether capital structure has any impact on profitability.

### 2.1.3. Optimal Capital Structure

According to Siddik et al. (2017) optimal capital structure is "increased firm value and decreased cost of capital. But the important question is to answer what the right mix of debt and equity is." Similarly according to Saheed et.al ( 2013) optimal capital structure means with a minimum weighted average cost of capital and thus maximize the value of organization. A business utilizes various kinds of financing to operate a company.

In underlining this vital role of information about capital structure in the activities of a firm Goyal (2013) also contends that one of the major objectives of a firm is to maximize the wealth of itsowners or shareholders which is defined as the current price of the firm's outstanding shares. In order to maximize their wealth the firm's management should take rational financing decisions regarding optimal capital structure which in turn would minimize its cost of capital. In this vein Singh & Bagga (2019) say that identifying the optimal capital structure is one of the major goals in current strategic management.

### 2.1.4. Impact of Capital Structure

Among the various studies conducted on the impact of capital structure Ahmad (2014) argues that capital structure is one of the capital investment decisions that affect a firm's performance. Ahmed adds that the findings of most empirical studies conducted in previous years revealed that

capital structure decisions have a significant impact on a firm's value and its performance. Still there have also been findings of empirical studies that provided a contradictory result on the relationship between capital structure and profitability of a firm. There are some researchers who agree with the tradeoff theory that the profitability of the firm has positive relationship with capital structure (Mohammed, 2015).

The results of researchs done in African countries on this topic have shown different results. Quite a large number of studies found out that capital structure has an impact on the performance and the profitability of banks. For example Anarfo & Appiahene ( 2017) maintain that in sub-Saharan African countries banks' capital structure is an adverse driver of their profitability which implies that banks in Sub-Sahara Africa will be best served by reducing their debt ratios and resorting to equity financing to enhance their profitability since higher debt ratios reduces their profitability.

The fact that stock markets in Sub-Saharan Africa are underdeveloped means that banks in Africa do not have to be concerned about the signaling hypothesis should they employ equity finance. In an attempt to explain the reasons Anarfo & Appiahene add that "negative impact of banks' capital structure on their profitability may be a result of higher bankruptcy cost that outweighs the benefits of debt financing in a form of tax savings according to the trade-off theory of capital structure"

Some others for example Iorpev and Kwanum (2012), Sebastain (2017) and Ibrahim (2018) have found that capital structure and profitability have little or no relationship in that the capital structure of banks has little or no impact on their profitability.

### 2.1.5. The Elements of Capital Structure

**Capital:** Capital refers to the funds raised from sources, such as long-term debt and equity, are referred to as capital, which invested in long-lived assets to generate future cash flows. The money generated from firm's operations is also called capital.

**Equity:** Equity is ownership interest in business or generally it's an investment used in company to earn profit by the shareholders. Equity or shareholders´ equity is part of the total capital of a business. It is classified as common stock, preferred stock or retained earnings. For expanding a business more capital is required therefore company issued share to general public. According to

Saad (2010) Total equity includes common shares, preference shares, surplus, and reserve.

**Equity Financing:** According to Zafar et al. (2016) says that equity financing is the issuance of share or share issued as common stock and preferred stock. Main benefit of equity is that no pay back is required by company to shareholder and as compare to debt financing no interest payment is required.

**Debt:** Debt or liability represents the value of the creditors' stake in the firm. The value of debt represents the discounting and summing of all current and future payments the company has promised to creditors. These liabilities take various forms and have different claim positions with regard to the cash flows and assets of the company.

**Debt Capacity:** According to Rizov (2001) debt capacity is the amount of money a company currently could borrow. It is not, however, the amount it should borrow. Unused debt capacity is capacity to borrow more. Good debt is debt that adds increments of value to share price. Unused good debt capacity is incremental borrowing that would add to share value.

**Financial Leverage:** leverage is to increase both the expected returns and the risk to owners. Taxes provide an incentive to take on debt, since interest paid on debt is a deductible expense for tax purposes, shielding income from taxation. But the possibility of incurring direct and indirect costs of financial distress discourages taking on high levels of debt (Drake,n.d ).

**Levered Firm:** A "levered firm" uses a mix of equity and various forms of liabilities.

**Financial Distress:** As Drake (n.d) describes it financial distress is the failure to pay interest or principal as promised may result in financial distress. Financial distress is the condition where a firm makes decisions under pressure to satisfy its legal obligations to its creditors. These decisions may not be in the best interests of the owners of the firm. With equity financing there is no obligation.

**Profitability:** The profitability level of a company is among other things is largely influenced by its capital structure policies. Several works have been done on the relationship between capital structure and profitability of a firm.

ROA - commonly used measure of bank performance which gives a picture of how effective the management of the bank is in generating profits with its available assets.

ROE - is a measure of how effectively shareholders' funds are being used by the management of the bank.

EPS - the basic measure of corporate performance and the more the EPS the better the

performance is.

NIM- is one indicator of a bank's profitability and growth. NIM reveals the amount of money that a bank is earning in interest on loans compared to the amount it is paying in interest on deposited.

## 2.2. The Theoretical Review of Capital Structure

Since the 1950's various theories and models that explain the concept of capital structure have been propounded by different scholars out of which the major ones are the irrelevance theory, the tradeoff theory the pecking –order theory, the market timing theory and the agency theory. The following sections present a discussion of the basic assumptions and arguments of these five theories of capital structure.

### 2.2.1. The Irrelevance Theory of Capital Structure

The irrelevance theory which was introduced in 1958 Modigliani and Miller (1958) is considered as the starting point of modern theory of capital structure. According to Abeywardhana (2017) the theory was propounded based on assumptions related to the behavior of investors and capital market. The theory illustrates that firm value is unaffected by its capital structure. Securities are traded in perfect capital market, all relevant information are available for insiders and outsiders to take the decision (no asymmetry of information), that is transaction cost; bankruptcy cost and taxation do not exist.

In describing its major argument Sidik et al. (2017) say that according to the irrelevance theory under perfectly competitive capital market conditions, capital structure decisions do not affect a firm's value which is instead determined solely by its basic earning power. The irrelevance theory states that the business has a certain set of predicted cash flows and investors and corporations are assumed to have a similar access to financial markets. And the market value of a business is based on its earning power and by the potential risk of its main assets. This means the way the business selects to finance its investments or distribute its dividends does not have an impact on its value (Singh & Bagga, 2019).

Regarding the relationship between capital structure and bank's performance Modigliani and Miller (1963) found out that there is a positive relationship between them and performance

affects debt. However the basic assumption of a perfectly competitive market condition made by Modigliani and Miller in their 1958 version of the irrelevance theory of capital structure was criticized and was mentioned as its major gap. And the criticism is a valid one since a perfectly competitive market in the strictest sense of the word has not existed in the history of capitalistic economy. It was this criticism that brought the second major theory of capital structure i.e the tradeoff theory.

### 2.2.2. The Tradeoff Theory

The trade-off theory is one of the basic theories that have dominated the field of capital structure. By devising this theory Myers (1984) eliminated the constraints of the propositions in the irrelevance theory of MM and used it as a theoretical foundation to explain the capital structure puzzle. One of the elements of capital structure that this theory dealt was that of optimal capital structure. According to this theory a firm can achieve an optimal capital structure through adjusting the debt and equity level thereby balancing the tax shield and financial distress cost. And an optimal level of the debt is where the marginal benefit of debt finance is equal to its marginal cost though there is no consensus among researchers on what consist the benefit and costs (Abeywardhana, 2017).

In this vein Siddik et al. (2017) citing Brigham and Houston (2004) say that according to the tradeoff theory the optimal capital structure of a firm is determined by the tradeoff of the benefits of using debt known as tax savings and the costs of debt such as agency costs. It has also been stated by the tradeoff theory that firms having more physical assets should employ additional debt capital as these physical assets would be collateral. In indicating the point of emphasis of the tradeoff theory Singh & Bagga (2019) say that the theory focuses on two concepts. These are cost of financial distress and agency costs. The theory also acknowledges the tax advantage from interest payments. As has been mentioned previously the task of identifying the right mix of the benefits and the costs has been a challenging one.

In relation to this Fama and French (2002) state that using this theory the optimal capital structure can be identified through the benefits of debt tax deductibility of interest and cost of bankruptcy and agency cost. The other relevant point here is the relationship between capital structure and bank performance. In a similar fashion to the previous theory, the tradeoff theory

posits that there is a positive relationship between debt and performance that performance affects debt.

### 2.2.3. The Pecking- Order Theory

According to Ross et al. (2008) as cited in Tuncay (2018) the pecking order theory is another theory that gained interest in the corporate finance. It was a theory developed by Myers (1977) and as Sidik et al. (2017) say, in contrast to the previous two theories , "the pecking order theory believes in no optimal capital structure. The theory suggests that every firm has a preferred hierarchy for the financing decisions and usually prefers the internal financing rather than acquiring funds from outside the organization. However financing from outside sources is required when all in-house funds are employed. "

Here it can be said that among the different aspects of capital structure and a bank's activity, this theory emphasized the order of financing actions and sources. In further explaining this idea of order Abeywardhana (2017) notes that firms utilize internal funds first then issue debt and finally as the last resort issue equity capital. In relation to this Singh & Bagga (2019) add that according to this theory "companies show a distinct preference for utilizing internal finance. If internal funds are insufficient to finance investment opportunities or company might obtain external finance but it will choose among various external finance sources so as to minimize additional costs."

### 2.2.4. The Market Timing Theory

Market timing theory was propounded by Baker and Wurgler (2002).Abeywardhana (2017) citing Wurgler (2002) write that the decision of the firms for issuing new equity or not is related to the overrating and underrating of their share price. And according to this theory firms issue new equity when their share price is overrated and they buy back shares when the prices of shares are underrated. Similarly (Singh and Bagga (2019) Citing Baker and Wurgler (2002) say that companies time their equity issues in a way that they issue the fresh stock when the stock prices are overvalued and buy back shares when they are undervalued.

As a result variations in stock prices influence firms' capital structures. The theory strongly holds that the fluctuation in the price of shares affect the corporate financing decisions and finally the

capital structure of the firm. However, somewhat contrasting arguments were made by scholars in the area. For example Hovakimian (2006) and Alti (2006) stated that market timing does not have a significant effect on the firms' capital structure in the long run. Regarding the relationship between equity and bank performance the theory posits that there is a positive relation between them and performance affects debt.

### 2.2.5. The Agency Theory

The agency theory is the other major theory of capital structure that was developed in 1976 by Jensen and Mekling. The theory argues that the cash flow of a firm relies on its ownership formation. The proponents of this theory suggested that there should be the best combination of debt and equity capital that could shrink total agency costs. Regarding the relationship between performance and debt, the agency cost theory in contrast to the other theories of capital structure holds that there is a negative relation between debt and performance. What is more Jenson (1986) states that debt can reduce the agency cost and argue that higher the debt capital the greater the commitment to pay out more cash (Abeywardhana, 2017 )

Jensen and Mekling also explained the basic assumptions of their theory by analyzing the impact of the existence of debt on equity and a firm's capital structure. As for the impact of debt on equity they argued that it reduces the amount of equity and enables a higher level of insider ownership. As for the impact of the debt on a firm's capital structure Jensen (1986 ) held that it acts as a bonding mechanism for company managers. In describing the relation between debt financing and efficency of managers Easter (1984) maintained that external capital market monitoring brought to companies by debt financing forces managers in value maximizing. (Onsomu, 2014 )

## 2.3. Empirical literature Review on Capital Structure

### 2.3.1. Cross Country Studies

As has been mentioned both the empirical and practical studies conducted on the topic of capital structure have revealed contrasting results. Some have shown strong positive relation between these two while other studies revealed that capital structure and profit have no relationship. The following articles were selected for this summary based on this contrasting nature of the topic of capital structure and the different findings of those studies.

A study by Sultan and Mohammed (2015) is one of the empirical studies conducted on the topic of capital structure. The study attempted to analyze the impact of capital structure on firms in Iraq. The research used the variables: profit margin, return on equity, return on assets, capital turnover, financial leverage, debt to equity, firm size and firm growth. The study concluded that capital structure influenced the profitability of listed firms in Iraq.

A research by Messar & Braik (2018) is the other study that brought a similar result. This empirical research tried to examine the influence of capital structure on firm performance. It measured capital structure using variables such as size, growth opportunities, tangibility, risk and dividend policy. According to the findings of the study capital structure had a significant positive influence on the profitability in Jordanian banking industry.

Also among cross country studies is the one by Velnampy & Niresh (2014). This study tried to investigate the relationship between capital structure and profitability of ten listed Sri lank a banks over the past 8 year period from 2002 to 2009. The study found out that there is a negative association between capital structure and profitability except the association between debt to equity and return on equity. Further the results suggest that 89% of total assets in the banking sector of Sri Lanka are represented by debt, confirming the fact that banks are highly geared institutions.

A research by Khalid et al (2013) dealt with the impact of capital structure on the profitability of listed companies in India over a period of five years from (2008 to 2012). They found out that there was a positive and statistically significant relationship between debt to asset ratio and interest coverage ratio but a negative relationship between debt to equity ratio and firms' profitability of selected companies in the automobile industry in India.

From the studies conducted in Africa one notable example is a research by Anarfo & Appiahene (2017) who interestingly attempted to analyze the matter at continental level. According to their findings banks' capital structure is a driver of profitability. Other variables that significantly influence banks profitability are size, tangible asset, growth, taxes and interest rate. A similar study (though it was at a country level) was also conducted by Musah (2017) The findings of the study showed that on the control variables, firm size, foreign ownership and age of the bank were positively associated with banks profitability while growth in customers' deposits was negatively associated with banks' profitability. According to the results of these two studies capital structure and profitability are strongly related.

Enugu and Amorji (2014) are the other researchers who conducted a study on the effect of financial leverage on the financial performance of pharmaceutical companies in Nigeria. According to their findings debt to equity ratio and profitability had a significantly negative relation while the relation between interest coverage ratio and profitability was a significantly positive one.

There are also studies conducted in African countries on the similar topic that brought a contrasting result to those two above. For example Ebaid in (2018) which tried to investigate whether capital structure had any impact on a firm's performance. The study sampled non-financial Egyptian listed firm's from1997 to 2005. The results revealed that capital structure choice decision, in general terms, has a weak-to-no impact on firm's performance.

Nirajini and Priya (2013) have done a research study based on the capital structure and financial performance of the eleven listed trading companies in Sri Lanka for a period of seven years. The study showed that debt to asset ratio, debt to equity ratio and long term debt was positively correlated with growth profit margin, net profit margin, ROCE, ROA, and ROE at significant level of 0.05 and 0.01. The study observed that capital structure has significant impact on financial performance of the firm.

### 2.3.2. Studies Conducted in Ethiopia

This section presents a summary of the findings of six studies conducted in Ethiopia on capital structure.

Among the studies conducted in Ethiopia regarding the impact of capital structure on the profitability of banks one was by Argaw (2015). The researcher used a sample of 8 commercial banks for 12 years (2001/02 – 2012/13). The finding showed that Capital structure as measured by debt to asset ratio had statistically significant negative relationship with profitability whereas deposit to asset ratio, liquidity (loan to deposit) had statistically significant positive relationship with profitability. Regarding the control variables the study revealed that spread & bank size had a positive and statistically significant relationship with profitability whereas Growth had statistically insignificant relationship with profitability of core business operations of commercial banks. In general according to the findings of the study capital structure had significant impact on profitability of core business operations of commercial banks.

Mohammed (2014) dealt with determinants of capital structure and its impact on the performance of Ethiopian insurance industry. The study found out that Debt to asset (DA) had a significant negative relationship with profitability while growth and size had a positive relation, the former an insignificant and the latter significant relations with capital structure. Woldemikael (2012) is a study that tried to find out the determinants of capital structure of commercial banks in Ethiopia. According to the findings of the study leverage had statistically negative relationship with profitability. Regarding the other variables for example according to his findings growth had a negative relation with capital structure while size had a significant positive relation with profitability.

A study by three researchers called Muhammed, Ashenafi and Netsanet (2015) is a study conducted in Ethiopia on the topic of capital structure and its relation with performance of commercial banks. According to the study as measured by ROA there was a negative relationship between capital structure and the performance of banks. The overall finding of the study indicated that capital structure has positive or negative association with performance. Hence capital structure choice has a significant relation with bank performance and there is an inconsistency of capital structure theory which is applicable in the Ethiopian banking industry.

Yigermal, M. E. (2017) tried to investigate the determinants of profitability in selected private commercial banks in Ethiopia. The researcher used return on asset (ROA) and return on equity (ROE) to measure profitability. Yigermal's findings showed that the profit of the private banks after tax got increasing year after year and their ROA was found to be three percent on average. According to the Yigermal, M. E. (2017) the fact that the deposit share of the banks which was only10 percent in 2000 reached above 30 percent in 2014 was an indicative of the strong relationship. His findings also revealed that the variable bank size and GDP growth rate had a positive and significant impact on private commercial banks ROA and ROE while spread and loan to deposit ratio had a negative and significant impact on the bank's ROA.

Shibru (2012) attempted to investigate the relationship between leverage and firm specific (profitability, tangibility, growth, risk, size and liquidity) determinants of capital structure decision, and the theories of capital structure that can explain the capital structure of banks in Ethiopia by using twelve years (2000 – 2011) data collected using mixed methods. His findings showed that profitability, size, tangibility and liquidity of the banks were important determinants of capital structure of banks in Ethiopia whereas growth and risk of banks were found to have no statistically significant impact on the capital structure of banks in Ethiopia.

Gebremichael (2016) was the other researcher who did an in depth and through analysis on the topic of capital structure and its impact on profitability. The researcher clearly presented the findings. For example using the variable Deposit to Asset ratio indicated that it had positive relationship with profitability level. The other variable was Loan to Deposit ratio and the results indicated that liquidity as measured by loan to deposit had positive relationship with profitability (net interest margin). Spread and bank size had positive relationship with profitability.

Tamirat (2015) dealt with on the topic of the effects of debt financing on profitability of Commercial Banks in Ethiopia. The researcher used macroeconomic level factors for example Inflation (INF) as explanatory variable. The focus of the study was on dynamic working environment which significantly affects the decision of capital structure The researcher found out that capital structure as measured by total debt to asset had negative and positive relationship with ROA and ROE respectively. The relationship between interest coverage ratio and profitability was positive and statistically significant for both ROA and ROE, even at 1% significant level. Banks size and

inflation had a positive relationship whereas tangibility of assets had a negative relationship with profitability and statistically significant for both ROA and ROE at 1% level of significance.

The study by Tigist (2018) which dealt with the topic of capital structure and profitability in commercial banks in Ethiopia is a recent one. The researcher used macroeconomic level factors for example Inflation (INF) as explanatory variable. The focus of the study was on dynamic working environment which significantly affects the decision of capital structure The researcher found out that capital structure as measured by total debt to asset had negative and positive relationship with ROA and ROE respectively. The relationship between interest coverage ratio and profitability was positive and statistically significant for both ROA and ROE, even at 1% significant level. Banks size and inflation had a positive relationship whereas tangibility of assets had a negative relationship with profitability and statistically significant for both ROA and ROE at 1% level of significance.

## 2.4. Conclusion and Knowledge Gap

The findings of studies on the topic of capital structure and its impact on profitability and performance and particularly in the banking and sector can be classified into three. One those that found out that capital structure has an impact on the profitability or performance of commercial banks. Two those studies that found out no relationship between capital structure and profitability or performance and three the ones that found out mixed results. Among the various studies conducted on the topic studies conducted by Marandu & Sibindi (2016 ) and Samuel (2016) there was significant relationship between profitability and the determinants of capital.

Similarly another study by conducted among selected commercial banks in Kenya revealed that even though its effect was minimal, capital structure affected the profitability of commercial banks in Kenya. Another study by Anarfo and Appiahene (2017) also reached at the same conclusion that banks capital structure “is an adverse driver of their profitability. This implies that banks in Sub-Sahara Africa will be best served by reducing their debt ratios and resorting to equity financing to enhance their profitability since higher debt ratios reduces their profitability.

In the second category we find studies that revealed contrasting results to the above. i.e weak or no relationship between capital structure and profitability. For example a study made by Ebaid

(2018) among selected firms in Egypt showed that capital structure had a weak-to-no impact on firm's performance. The researches done by Anarfo (2015) and Mututa (2016) also support this conclusion in that according to them capital structure did not determine bank performance rather it was capital structure that depended on bank's performance. The above instances show that even though there is an increasing number of studies that found out that capital structure has an impact on the profitability and performance of commercial banks, there have are also a considerable number of studies that showed contrasting results. The findings of Tigist (2018) and Mohammed et.al (2015) can be mentioned as examples for the third category. Apart from the existence of such disparities in the findings of studies, the focus areas of most researches done in the topic in Ethiopia have been the determinant factors of capital structure.

## 2.5. Conceptual framework of the study

According to Miles & Huberman (1994) conceptual framework of a study is a diagrammatic explanation of relationship between the independent variable and dependent variables that a researcher applies in attempting to answer the research questions. They add that conceptual framework can also refer to a written or visual presentation that explains either graphically, or in narrative form, the main things to be studied, the key factors, concepts or variables and the presumed relationship among them. Based on the general objective of the study which is examining the relationship between capital structure and profitability of commercial banks in Ethiopia the following model will be used which is shown in the following diagram.

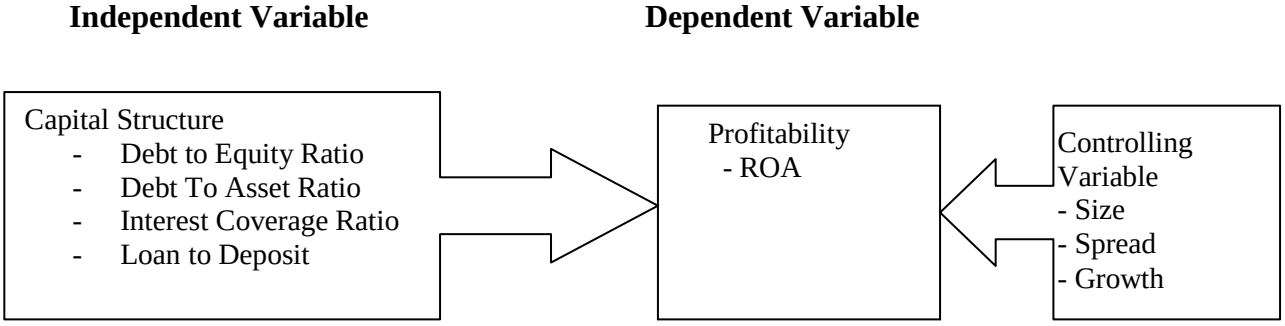



**Figure 2.1** Conceptual Framework

# CHAPTER THREE

# RESEARCH DESIGN AND METHODOLOGY

## 3. Research Design

A research design can be defined as a plan, structure or procedure applied in line with the questions and the objectives of a research. It provides an outline of activities and aspects of a research such as the research type, sampling technique, sources of data and methods of gathering, etc. by spanning the time conception and formulations of ideas to the completion or presentation of findings (Kumar, 2011, Creswell, 2009). This study attempted to identify the compositions of capital structures in selected commercial banks in Ethiopia and more importantly to investigate whether there was any relationship between the capital structures and profitability of these banks. Hence an explanatory research design was employed in this study. To that end the researcher formulated four null hypotheses. .

Then using E-views 8 software, the collected panel data was analyzed through descriptive statistics and multiple regressions. In the analysis of the descriptive statistics mean, median, maximum, minimum and standard deviation values were used to explain the trends of the data. Furthermore, diagnostic tests were applied in order to check the validity of the model based on the assumption of the Classical Linear Regression Model. Specifically, the assumption tests managed in this study were namely : the error term, heteroscedasticity, autocorrelation, and multicollinearity and normality. Finally, the Hausman specification test was used to choose the appropriate model for this study between the random effect (RE) and fixed effect (FE) model. Thus, based on the result of this test, the fixed effects model was found to be appropriate and applied for the study. Therefore, the multiple regression result of the fixed effect model wad used to analyze the impact of capital structure on profitability of commercial banks of Ethiopia, and to examine the relationship between the variables used in this study.

The analysis was done using correlation and regression analysis methods. After doing further analysis, interpretation and explanation the results were finally presented and discussed using tabular summaries, graphs, texts, findings of empirical and practical researches on the topic.

## 3.1. Population and Sampling Technique

The target populations for this particular study are all commercial banks registered by National Bank of Ethiopia (NBE). According to NBE (2017/18) Annual Report (until the time this data was gathered i.e. 2020) the total number of banks operating in the country was 19 out of which 18 are commercial banks except Development Bank of Ethiopia which provides banking service to the selected government priority sectors. Based on this information and by using purposive sampling technique the researcher set the sample population to be 12. In selecting these twelve banks the maximum combination of years of experience, market share and capital were used as criteria.

The selected banks are: Commercial bank of Ethiopia (CBE),Awash International bank (AIB), Dashen Bank (DB), bank of Abyssinia (BOA),Wegagen Bank (WB),United Bank (UB),Nib International Bank (NIB), Cooperative Bank of Oromia (CBO) , Lion International Bank (LIB), Oromia International bank (OIB), Zemen Bank (ZB) ,Buna International Bank (BIB) , Berhan International Bank (BIB)) for the period 2012 to 2018. It was based on these and other facts that are presented in detail in a tabular form in (Annex I ) that the above sample universe was determined. Therefore it is believed that generalization could be made using the findings of the study as a basis.

## 3.2. Data Type and sources

### 3.2.1. Type of Data

The type of data used in this study is panel data which was gathered from audited financial reports (Balance Sheet and Income Statements) of twelve commercial banks for six years (2012-2018). Panel data was selected as the appropriate type of data for this research in that the study examined the relationship between capital structures and profitability over a long period (six years) and panel data in contrast to other types of data consists of both the cross-sectional information (which captures individual variability over a period of time) and the time-series information (which captures dynamic natures at same point of time). Since this study attempted to investigate the relationship between the capital structure and profitability and explain the matter well panel data was found to be the appropriate type.

### 3.2.2. Sources of Data

The study used secondary sources to gather the necessary data. The selection of the types of data and its source in the case of this study the National bank of Ethiopia (NBE) was made so for two main reasons. One, especially in the specific context of the research topic, secondary data serves as a source of data available in a form that is permanent and the one that can be checked relatively easily by others. It is also believed that using secondary data in conducting studies on a similar topic and similar objective increases the dependability level of the data thereby helping to ensure reliability. Two, since NBE is the controller and governor of financial institutions of Ethiopia, the researcher found it to be the most credible and authoritative source of data.

## 3.3. Methods of Data Collection

In an investigative study there are three familiar types of research approaches to business and social research namely, quantitative, qualitative and mixed (Creswell, 2009). According to Abiy (2009) quantitative research can be defined as "a systematic and scientific investigation of quantitative properties and phenomena and their relationships." Considering this nature of quantitative research method in line with its objectives a quantitative data collection and analysis method was employed in this study.

## 3.4. Data Analysis Methods

### 3.4.1. Tools Used for Analysis

The study used the common methods of descriptive statistics such as mean, mode, minimum, maximum, standard deviation and analysis methods such as Pearson's coefficient of correlation and the fixed effects regression model as tools for analysis.

### 3.4.2. Data Presentation Tools

The findings of the study are presented by using tabular summaries, graphs, charts and textual descriptions.

## 3.5. Specification of the Model

The following penal data model has been used to test the theoretical relation between the financial performance (profitability) and other independent variables of commercial banks in Ethiopia:-

Profitability =f(CS)

$ROA_{it} = a + b1\ DER_{it} + b2\ DAR_{it} + b3\ LD_{it} + b4\ ICR_{it} + b5\ SIZE_{it} + b6\ SPREAD_{it} + b7\ GROWTH_{it} + \varepsilon_{it}$

Where

$ROA_{it}$ is the financial performance (profitability) i.e. Return on total Assets for firm i in year t,

$DER_{it}$ is debt to equity ratio for firm i in year t,

$DAR_{it}$ is debt to asset ratio for firm i in year t,

$LD_{it}$ is loan to deposit ratio for firm i in year t,

$ICR_i$ is interest coverage ratio for firm i in year t,

$SIZE_{it}$ is the Size of the firm (Ln of total asset) for firm i in year t,

$SPREAD_{it}$ is spread of the firm for firm i in year t,

$GROWTH_{it}$ is the growth of asset (% change of total assets) for firm i in year t,

a is the constant term of the model,

b is the coefficient of the model and

**ε** is the error term

## 3.6. Variables Description

The different types of variables used in the study are discussed in the following sections.

### 3.6.1. Dependent Variable

**Return on Assets (ROA)** is measured as the ratio between Earnings after Interest and Taxes (net income) and Total Assets. It is one of the variables used to measure the profitability of a firm. In describing the profitability of a firm and its impact on financial performances Neeti et al (2017) and Ayad & Mustafa (2015) say that profitability is a very vital variable for a firm because a firm having a high profitability and sales turnover would not rely on Debt Capital. And if the firm goes for external financing instead of relying on debt capital then it would face no difficulty in bearing the fixed charges associated with it. ROA is the dependent variable used in this study to measure the profitability of commercial banks in Ethiopia.

**ROA = Net Income / Total Assets**

### 3.6.2. Independent Variables

**Debt to Equity Ratio (DER)**: is a long-term solvency ratio that indicates the soundness of long-term financial policies of a company. It shows the relation between the portion of assets financed by Liabilities and the portion of assets financed by stockholders. As the debt to equity ratio expresses the relationship between external equity (liabilities) and internal equity (stockholder's equity), it is also known as "external-internal equity ratio".

According to Enekwe et al. (2014), a high debt to equity ratio generally means that a company has been aggressive in financing its growth with debt. This can result volatile earnings 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 earring per share than it would have without this outside financing. If this were to increase earning by a greater amount than the interest on debt, then the shareholders benefit as more earning are being spread among the same amount of stock. 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.

A lower debt to equity ratio usually implies a more financially stable business while firms with a higher debt to equity ratio are considered more risky to creditors and investors. Unlike equity financing, debt must be repaid to the lender. Since debt financing also requires debt servicing or regular interest payments, debt can be a far more expensive form of financing than equity financing. (Tamirat 2015,Gibson 2013, Neeti et al 2017, Enekwe, et al 2014 and Khalid A., et al 2013).

**Debt to Equity Ratio =Total Debt/Shareholders Equity**

**Debt to Asset Ratio (DAR):** Debt to asset is measured as the ratio between total debt and total asset. The total debt includes current liabilities, provisions and short term and long term borrowings. In other words; the debt to asset ratios measures the overall debt load of a company as compared to its assets or equity. This shows how much of the company assets belong to the shareholders rather than creditors. Debt to asset which is also termed as leverage can be described in terms of levels as highly leveraged and less leveraged. When shareholders own a majority of the assets, the company is said to be less leveraged and when creditors own a majority of the assets, the company is considered highly leveraged. In general all of these measurements are important for investors because they help them know how healthy or risky the capital structure of a company is and whether it is worth investing in or not. (Tamirat 2015, Gibson 2013, Khalid A., et al 2013,Neeti et al 2017, Enekwe, et al 2014 and Khalid A., et al 2013).

**DA = Total Debt / Total Asset**

**Interest Coverage Ratio (ICR):** Interest coverage ratio (ICR) which is also termed as interest coverage, debt service ratio or debt service coverage ratio is the other variable used in this study. It is basically a measure of a company's ability to meet its interest payments. In other words the ratio is a measure of the number of times a company could make the interest payments on its debt with its EBIT. In general ICR determines how easily a company can pay interest expenses on outstanding debt (Tamirat, 2015, Tigist, 2018 Enekwe, et al 2014 and Khalid A., et al 2013). It is calculated by dividing earnings before interest and taxes (EBIT) for a time period by interest expenses for the same time period. When the value of the ICR is high, the company can easily pay off its interest cost and a lower ratio indicates that less operating profits are available to meet interest payments and that the company is more vulnerable to volatile interest rates.

Therefore, a higher interest coverage ratio indicates stronger financial health which means the company is more capable of meeting its interest obligations.

In relation to this for example the trade-off theory posits that the cost of bankruptcy would increase with the growth of debt capital i.e as the company's debt increases, it should be aware that there would be a risk of bankruptcy. Therefore the theory suggests that the company must hold enough earning to pay off its interest cost on debts. In explaining the impact of ICR on a bank's financial performance and capital structure Harris and Raviv (1990); and Eriotis et.al (2007) say that when the company's income cannot cover the debt and interest cost, there would be a high risk of bankruptcy. As has been briefly stated above the interest cost would impact the capital structure. Since this is what the study attempts to find out, ICR was found to be one of the appropriate variables to be used. Interest Coverage Ratio is represented by the following equation:

**Interest Coverage Ratio (CR) = EBIT / Interest Cost**

**Loan to Deposit (LD)-** Loan to deposit ratio as a measurement variable is used to assess a bank's liquidity by comparing its total loans to its total deposits for the same period. It measures the funds that banks utilized into loans from the collected deposits. What is more, Loan to deposit ratio validates the association between loans and deposits and provides a measure of income source and the liquidity of bank asset tied to loan (Makri, 2014, Aragaw 2015 and Mathewos, 2016). Loan to deposit calculated as:

**LD = Total loan / Deposit**

### 3.6.3. Controlling Variables

**Size of the Firm**: according to most scholars and studies, firm size is considered as the most important variable for every firm because a firm's sustainability mostly depends on its size and also its income which is directly proportional to its sales turnover. Here it can also be said that if a firm's sales turnover increases, then there is a probability that its profit will increase which would result in an increase in debt service capacity (interest). As a result, the firm will become capable of affording more debt. If a firm's sales turnover is sound and the amount of fixed charges can be predicted financial institutions and banks will easily provide loan. In relation to this for example the trade-off theory posits that firm size could be an inverse proxy for the

probability of the bankruptcy costs in that larger firms are likely to be more diversified and fail less often. This means they can lower costs (relative to firm value) in the occasion of bankruptcy.

According to Titman and Wessels (1988) larger firms are more likely to have higher debt capacity and are expected to borrow more to maximize the tax benefit from debt because of diversification. Therefore in their view size has a positive effect on leverage. Still there has also been contrasting arguments regarding the impact of size of a firm on a firm's profitability. Titman & Wessels (1988), also state that there is a high correlation between the natural logarithm of total assets and the natural logarithm of sales (about 0.98), and therefore choosing any of them is a substitute to the other. The size of firm represented by the following equation:

**Size of the Firm = Ln(total asset)**

**Spread**

Spread is the second controlling variable used in this study. Spread is the difference between the interest rate that a bank charges a borrower and the interest rate a bank pays a depositor. The bank spread can indicate a bank's profit margin. A high spread equates to a higher profit margin, since the difference between interest earned and interest paid out is high. Spread which is also termed as bank spread or net interest spread.

According to Mages (2017) and Khumaloand et.al (2011) spread is the difference between income received on loans (divided by total loans) and interest paid on deposits (divided by total deposits). Regarding its relation with the performance of banks for example the empirical studies of Vickery (2011) and Irungu (2013) revealed a positive relationship between spread and net interest margin or profitability. Due to the fact that the profitability of core operations of banks depends on interest income and expense and in line with empirical evidences, in this study a positive relationship between spread and profitability was expected. The following formula was used to calculate spread:

$$\text{Spread} = \frac{\text{INTEREST INCOME}}{\text{Loan \& Advance}} - \frac{\text{INTEREST PAID}}{\text{Deposit}}$$

**Growth of Assets**: According to (Heshmati, 2001) cited in Anarfo (2015) when firms have high growth potential, most of the time, their retained earnings are not enough to finance their positive NPV projects and they resort to borrowing. One of the dominant arguments is that firms with high growth potential will have high debt ratios. Still like the concept of capital structure itself the relationship between capital structure and firm growth has been controversial. For example (Kester, 1986, Titman and Wessels, 1988, Barton et al.; 1989, Ahmed et al., 2010) hold that there is a positive relation between firm growth and capital structure. Regarding the relationship between growth and profitability the tradeoff theory considers growth opportunities as indicators of the firm success because firms that have growth opportunities are stronger to face financial distress. According to this theory these kinds of firms also have good recognition in getting funds and easier access to the finance market. On the other hand according to (Kim and Sorensen, 1986, Rajan and Zingalls 1995, Roden and Lewellen 1995) cited in Anarfo (2015) other researchers based on the pecking order theory suggest that there exist a negative relationship between a firm's growth in assets and its capital structure because higher growth firms use less debt. Growth of Asset over the period of time is calculated as:

**Growth of the Firm = (Assets of current year – Assets of previous year) / (Assets of current year)**

**Table 3.1: Measurement and Operationalization of variables**

| Variables | Notation | Measurement |
|---|---|---|
| Financial performance [ Profitability] | ROA | Net Income / Total Assets |
| Debt to Equity Ratio | DER | Total Debt / Shareholders Equity |
| Debt to asset Ratio | DAR | Total Debt / Total Assets |
| Interest Coverage Ratio | ICR | EBIT / Interest Cost |
| Loan to Deposit | LD | Total Loan / Deposit |
| Firm Size | SIZE | Ln(Total Asset) |
| Spread | SPREAD | (Interest Income /Loan & Advance) - (Interest Paid / Deposit) |
| Growth of the firm | GROWTH | (Asset of current year - Asset of previous year ) / (Asset of current year) |

# CHAPTER FOUR

# ANALYSIS AND DISCUSSION OF FINDINGS

## Introduction

This chapter presents analyses and discussion of the findings of the research. In attempting to find out what composition of capital structure a sample of 12 commercial banks in Ethiopia have and also whether their capital structure had any impact on their profitability, the study used secondary data (Audited financial statements reports of the 12 banks of Six years) collected from the National Bank of Ethiopia (NBE) as a major data input. The dependent variable is Return on Asset (ROA), the independent variables are: Debt to Equity Ratio (DER), Debt to Asset Ratio (DAR), Loan to Deposit (LD) and Interest Coverage Ratio (ICR) while the control variables are bank size, spread and growth.

Then using E-views 8 software results were computed and regression and correlation analyses were done. To ensure the validity and accuracy of the results, the necessary tests were done for error term, Hetroscedasticity, autocorrelation, normality and multicolinearity. After checking the validity of the method, the results were interpreted, analyzed and presented supported by various concepts, findings of other studies and theories.

The study formulated the following seven null hypotheses:

H1: There is no significant relationship between debt to equity ratio and profitability of commercial banks in Ethiopia.

H2: There is no significant relationship between debt to asset ratio and profitability of commercial banks in Ethiopia.

H3: There is no significant relationship between interest coverage ratio and profitability of commercial banks in Ethiopia.

H4: There is no significant relationship between loan to deposit and profitability of commercial banks in Ethiopia.

## 4.1. Descriptive Statistics

A total number of 72 observations were taken out of a six years data (2012-2018) of the sampled commercial banks and the mean, median, maximum, minimum and standard deviation of each dependent, independent and control variable was computed. A tabular summary of the results and the discussion of findings are done as follows.

**Table 4.1 - Summary of Descriptive Statistics for Dependent and Independent Variables**

| | Mean | Median | Maximum | Minimum | Std. Dev. | Observations |
|---|---|---|---|---|---|---|
| **ROA** | 0.028021 | 0.028075 | 0.051269 | 0.010087 | 0.007274 | 72 |
| **DER** | 7.339674 | 6.541247 | 24.93513 | 4.075853 | 3.793182 | 72 |
| **DAR** | 0.863130 | 0.864275 | 1.057803 | 0.38312 | 0.072349 | 72 |
| **LD** | 0.560408 | 0.612404 | 0.738008 | 0.005333 | 0.184618 | 72 |
| **ICR** | 2.501781 | 2.396505 | 4.704531 | 1.678367 | 0.559546 | 72 |
| **SIZE** | 9.394976 | 9.328965 | 13.34561 | 6.42099 | 1.392646 | 72 |
| **SPREAD** | 0.040087 | 0.039607 | 0.085902 | -0.012493 | 0.019087 | 72 |
| **GROWTH** | 0.224052 | 0.218425 | 0.420266 | 0.075497 | 0.083859 | 72 |

*Note: Return on asset (ROA), Debt to equity (DER), Debt to Asset Ratio(DAR), Loan deposit (LD), Interest coverage ratio (CR), Size(SIZE),Spread(SPREAD) and Growth(GROWTH).*

*Source: Annual Report of Sample Commercial Banks Computed using EViews 8*

### 4.1.1 Capital Structure

As has been in the previous sections one of the specific objectives of this study is to find out what composition of capital structure the selected commercial banks have. To that end results were computed for four independent variables that represented capital structure namely: Debt to Equity Ratio (DER), Debt to Asset Ratio (DAR), Loan to Deposit (LD) and Interest Coverage Ratio (ICR).

As shown in table 4.1 above Debt to equity ratio (DER) has a mean value of 7.339674. It has 3.793182 standard deviation and 2493.51% and 407.59% maximum and minimum values respectively. Here an average debt to equity ratio of 733.96% shows that the firms much preferred debt financing to equity financing. In other words a 733.96% mean value of DER means that during the study period the sample banks used this amount of debt to equity finance their capital structure. The fact that the banks have a ratio of 733.96 times more debt than equity capital indicates that commercial banks in Ethiopia use more debt financing than equity financing.

Debt to Asset Ratio (DAR) is the other independent variable used to measure capital structure. As shown in the above table 4.1 the sampled commercial banks have a mean value of 0.863130 DAR whose standard deviation was calculated to be 0.072349. This mean value of DAR shows

that during the study period the sample commercial banks financed their total assets by using 86.31% of debt which indicates that the sample banks had variation in using debt and equity on their total assets or financing their operation. In general an 86.31 % DAR mean value indicates that commercial banks in Ethiopia are highly levered institutions.

The average loan to deposit ratio of the selected commercial banks is 0.560408 which has standard deviation of 0.184618 while the maximum and minimum values of LD are 0.738008 and 0.005333 respectively. Here an average value of 0.560408 LD ratios means that on average 56.04% of the loan emanated from deposits of banks. In other words loan represents on average nearly 56.04% of deposit of commercial banks in Ethiopia

The fourth variable the study used to measure the capital structure of the banks was Interest Coverage Ratio (ICR). According to the findings during the study period commercial banks in Ethiopia had a mean value 2.501781 ICR. This shows that during the study period the sample commercial banks were more capable to meet their interest obligations from operating earnings. It also indicates that commercial banks in Ethiopia can easily pay off its interest expense. ICR has a standard deviation of 0.559546 and 470.45 % and 167.83 % maximum and minimum values respectively.

### 4.1.2 Profitability

The study used one dependent variable (ROA) to measure the profitability of the sampled commercial banks. As shown in above table 4.1, during the study period (2012-2018) the banks achieved a positive profit with a mean value of 2.80%. This means commercial banks in Ethiopia, in the years mentioned above earned on average a 2.80% return on asset from their investment in total assets. The result also indicates that on the average, for every one birr worth of the total asset of the banks, birr 2.08 was earned as profit after tax (Net income). A 0.007274 standard deviation of ROA implies that there was a relatively low risk of deviating from the mean ROA. The maximum and minimum values of ROA are 5.12% and 1 %.

As has been mentioned in the introductory section of this chapter the study used bank size, spread and growth as controlling variables. The results have shown that size which is represented by the natural logarithm of total assets has a mean value of 9.394976. The standard deviation of size is 1.392646. The value of size of the selected commercial banks range from a minimum of 642.09% to maximum of 1334.56%. The dispersion of size of sample commercial banks was found to be 1.392646 (139.26%). In the period under study out of the 12 sample commercial banks CBE which is a government

owned bank appeared to be the largest of all sample commercial banks.

As for the second controlling variable i.e Spread the results have shown that the mean and standard deviation of spread are 0.040087 and 0.019087 respectively. As shown in table 4.1 the mean asset growth rate of the banks is 0.224052 or 22.41% with a standard deviation of 0.083859. This indicates the existence of high variation in growth rate among commercial banks in Ethiopia. The minimum growth rate of 0.075497 or 7.55% and a maximum growth rate of 0.420266 or 42.03% implies that all other things being equal, in the six years' time listed banks' asset grew with the least rate of 7.55% up to the highest 42.03%.

## 4.2. Results of Correlation Analysis

According to Brooks (2008) correlation measures the degree of linear association between variables. The values of correlation coefficient are always ranged between +1 and -1. A correlation coefficient of +1 indicates that the existence of a perfect positive association between the two variables, while a correlation coefficient of -1 indicates a perfect negative association. On the other hand a correlation coefficient of zero indicates the absence of relationship (association) between two variables. A textual description and a tabular presentation of the results of the correlation analysis and the correlation matrix among dependent and independent variables is done in table 4.2 and the paragraphs that follow.

**Table 4.2 Correlation Analysis of Variables**

| | DER | DAR | LD | ICR | SIZE | SPEARD | GROWTH |
|---|---|---|---|---|---|---|---|
| ROA | -0.228724 | 0.088968 | 0.041626 | 0.590437 | -0.364005 | -0.175553 | 0.054574 |

Source: Annual Report of Sample Commercial Banks Computed Using EViews 8

As presented in table 4.2 above the results of the correlation analysis have revealed that ROA has positive correlation with DAR, LD, ICR and growth and a negative correlation with debt to equity ratio, size and spread.

## 4.3. Tests for the Classical Linear Regression Model (CLRM) Assumptions

As (Brooks,2008) states in order that the validity and robustness of the regressed result of the research is maintained and the research quality is augmented by identifying and correcting errors and any misspecifications a researcher must test the basic classical linear regression model

(CLRM) assumptions. Based on this the researcher tested the five assumptions of the classical linear regression model (CLRM): namely the error term, Heteroscedasticity, autocorrelation, normality and Multicollinearity. The results of the tests are discussed in the sections below.

### 4.3.1 Assumption One: the Errors have Zero Mean (E (ε) = 0)

According to Brooks (2008), the first assumption requires that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. The regression model used in this study has included a constant term therefore assumption one was not violated.

### 4.3.2. Test for Heteroscedasticity Assumption (var (ut ) = σ2 < ∞)

As indicated by Brooks (2008), this second assumption requires a constant variance of errors. If the errors do not have a constant variance, it is said that the assumption of homoscedasticity has been violated and the explanatory variables have hetroscedasticity. The study employed whites test to check whether there was hetroscedasticity across the range of explanatory variables or not as stated below:

*H0: The variance of the error is homoscedastic*

*H1: The variance of the error is heteroscedastic*

**Table 4.3 Heteroskedasticity White Test for ROA**

Heteroskedasticity Test: White

| | | | |
|---|---|---|---|
| F-statistic | 0.503460 | Prob. F(7,64) | 0.8286 |
| Obs*R-squared | 3.757816 | Prob. Chi-Square(7) | 0.8072 |
| Scaled explained SS | 4.713961 | Prob. Chi-Square(7) | 0.6948 |

Source: -Annual Report of Sample Commercial Banks Computed using E-views 8

As presented in the table above both the F- statistic and R-squared versions of the test statistic gave results that show the absence of Heteroskedasticity for the dependent variables ROA. The fact that the p-values considerably exceeded 0.05 and also the value of the third version of the test statistic,'Scaled explained SS ' (which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression) similarly suggest that there is no evidence for the presence of heteroskedasticity. The fact that the conclusions of the tests also showed no heteroskedasticity means the null hypothesis was not rejected.

### 4.3.3. Test for Autocorrelation Assumption (cov (ui, uj) = 0 for i ≠ j )

The autocorrelation assumption as noted in Brooks (2008) is that the covariance between the error terms over time (or cross sectionals, for that type of data) is zero. Here it is assumed that the errors are uncorrelated with one another which in other words means the errors are either auto correlated or that they are serially correlated.

Table 4.7 presents the Durbin-Watson test value for the autocorrelation of residual which is 1.711811. According to the DW statistics significance table, at 5% significance level the the relevant critical values for the test are dL= 1.433, dU = 1.801, and 4 - dU = 4- 1.801 =2.199; 4 - dL = 4-1.433=2.567. Accordingly, Durbin-Watson test value is clearly between the lower limit (dL) which is 1.433 and the upper limit which is 1.801. Therefore, the null hypothesis is not rejected and no significant residual autocorrelation is presumed.

To validate the result of Durbin-Watson test another test called Serial Correlation LM Test was also conducted. The Breusch-Godfrey Serial Correlation LM Test result as indicated in Table 4.4 below shows that the P-values of F-statistic and Obs*R-squared are greater than 5% and therefore the null hypothesis was not rejected and no significant residual autocorrelation was presumed.

**Table 4.4 Breusch-Godfrey Serial Correlation LM Test: ROA**

Breusch-Godfrey Serial Correlation LM Test:

| | | | |
|---|---|---|---|
| F-statistic | 1.478121 | Prob. F(2,62) | 0.2360 |
| Obs*R-squared | 3.276812 | Prob. Chi-Square(2) | 0.1943 |

Source: -Annual Report of Sample Commercial Banks Computed using E-views 8

### 4.3.4. Test of Normality (ut ∼N (0, σ2))

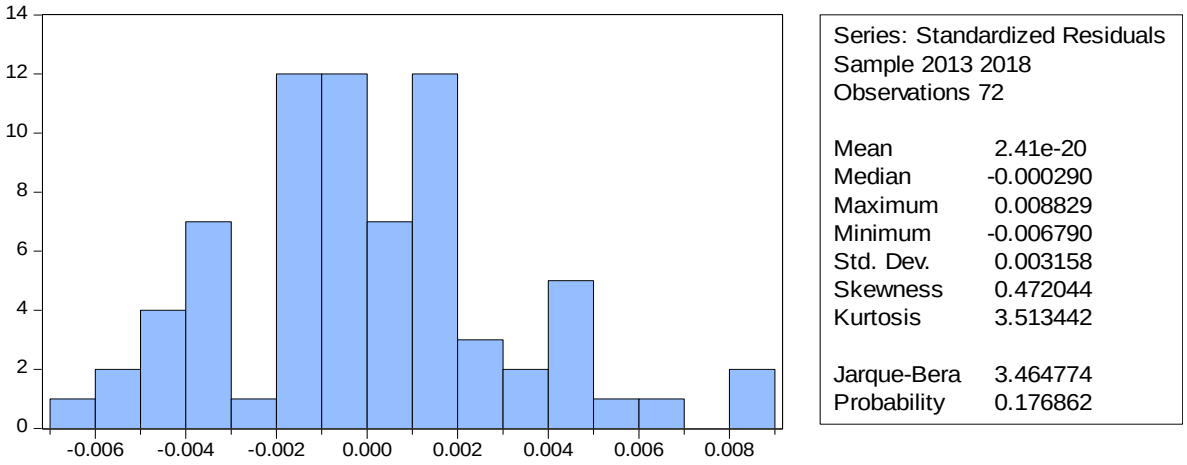
Test of normality is mainly about the distribution of the residuals and the shape of the histogram. And if the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would be significant. For example Jarque Bera value greater than 0.05 is an indicator for the presence of normality. This means that Jarque Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skewedness and kurtosis are ≈ 0 and ≈ 3 respectively. Skewedness and kurtosis are standard measurements for normality the former measures the extent to which a distribution is not symmetric with its mean value while the latter measures how fat the tail of the distribution is.

The hypothesis for the normality test was formulated as follows:

*H0: Error term is normally distributed*

*H1: Error term is not normally distributed*

**Figure 4.1 Normality Test ROA**




Source: -Annual Report of Sample Commercial Banks Computed using E-views 8

From the results shown in figure 4.1 above it can be concluded that the model had no problem of normality. As the normality assumption holds the coefficient of kurtosis is 3.513442 which is close to 3, skewedness is 0.472044 which is close to zero. The Jarque-Bera statistic has a P-value of 0.176862 which is greater than 0.05 implying that the data were consistent with the requirements of the normal distribution assumption. Therefore there was no problem of normality and the null hypothesis was not rejected.

### 4.3.5. Test for Multicollinearity

Correlation is a way to index the degree to which two or more variables are associated with or related to each other. The term multicollinearity indicates the existence of exact linear association among some or all explanatory variables in the regression model. In order to examine the possible degree of multicollinearity among the explanatory variables, correlation matrixes of the selected explanatory variables are presented in table 4.5.

According to this assumption a problem of multicollinearity is said to have occurred when the correlation is about 0.8 or larger (Brooks, 2008). As it appears in the correlation matrix table 4.5, there were no such high levels of correlations between the explanatory variables. Thus, there was no problem of multicollinearity while applying the model.

**Table 4.5 Correlation coefficient matrix**

| VARIABLE | DER | FL | LD | CR | SIZE | SPEARD | GROWTH |
|---|---|---|---|---|---|---|---|
| DER | 1 | | | | | | |
| FL | 0.095143 | 1 | | | | | |
| LD | -0.192896 | -0.129216 | 1 | | | | |
| CR | 0.320189 | -0.125274 | 0.045746 | 1 | | | |
| SIZE | 0.709875 | 0.045599 | 0.040215 | -0.004698 | 1 | | |
| SPEARD | -0.301868 | 0.185455 | 0.279963 | -0.333797 | -0.207841 | 1 | |
| GROWTH | -0.180827 | -0.167927 | 0.346846 | 0.058551 | -0.190219 | -0.166106 | 1 |

Source: -Annual Report of Sample Commercial Banks Computed using E-views 8

## 4.4 Results of the Regression Analysis

As stated in Brooks (2008), in financial research, the model used is panel data model which is estimated by using fixed-effects model or random-effect model. In order to select the appropriate model which provide consistent estimates for this study, Housman test was employed. The decision rule for Hausman test is rejecting the null hypothesis when the p-value is significant.

H0: Random effects model is appropriate

H1: Fixed-effects model is appropriate

**Table 4.6: Correlated Random Effects - Hausman Test**

Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 54.999975 | 7 | 0.0000 |

Source: -Annual Report of Sample Commercial Banks Computed using E-views 8

As the results of Hausman specification test presented in the above table 4.6 suggest the fixed effects model was better than random effects model as the p-value (0.0000) is less than 0.05 for dependent variables. These indicate that the null hypothesis did not work and for the above mentioned reason fixed effect model was the appropriate model for the given data set. In other words the random effects model had to be rejected and instead the analysis had to be based on the fixed effects estimates.

**Table 4.7: Fixed effect model estimates**

Dependent Variable: ROA

Method: Panel Least Squares

Date: 06/03/20 Time: 10:49

Sample: 2013 2018

Periods included: 6

Cross-sections included: 12

Total panel (balanced) observations: 72

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.063913 | 0.014002 | -4.56467 | 0.0000 |
| DER | -0.000773 | 0.000273 | -2.829116 | *0.0066 |
| DAR | 0.018712 | 0.007153 | 2.615973 | **0.0116 |
| LD | -0.009331 | 0.012881 | -0.724434 | 0.4720 |
| ICR | 0.014090 | 0.001172 | 12.02672 | *0.0000 |
| SIZE | 0.005865 | 0.001485 | 3.948694 | *0.0002 |
| SPREAD | -0.032693 | 0.05808 | -0.562891 | 0.5759 |
| GROWTH | -0.010504 | 0.00841 | -1.248904 | 0.2172 |

| Effects Specification |
|---|
| Cross-section fixed (dummy variables) |

| | | | |
|---|---|---|---|
| R-squared | 0.833066 | Mean dependent var | 0.028021 |
| Adjusted R-squared | 0.776372 | S.D. dependent var | 0.007274 |
| S.E. of regression | 0.003440 | Akaike info criterion | -8.285262 |
| Sum squared resid | 0.000627 | Schwarz criterion | -7.684475 |
| Log likelihood | 317.2694 | Hannan-Quinn criter. | -8.046086 |
| F-statistic | 14.69398 | Durbin-Watson stat | 1.711811 |
| Prob(F-statistic) | 0.00000 | | |

*** Significant at 1% and ** significant at 5%**

As can be seen in the regression results Table 4.7 above the adjusted R-square value is high (0.776372) which means about 77.64% of variations in ROA were well explained by the model. In other words, the independent variable values have at least 77.64% significant influence on profitability of commercial banks in Ethiopia while the remaining 22.36% is influenced by other

factors which are not considered in this study. In addition to this the 0.0000 probability coefficient of the overall F-Statistic (which is used to measure how well a model fits) indicates that the model used in this study was a well–fit one. Thus, the variables used in this study are well explanatory and appropriate ones in answering the research questions.

Capital structure as measured by debt to equity ratio (DER) with a (p- value = 0.0066) had a statistically negative relation with profitability at 1% significant level. Whereas, DAR as measured by total debt to total asset with a (p-value = 0.0116) had a statistically positive relation with profitability (ROA) at a 5% significance level. Moreover, the results from table 4.7 above show that interest coverage ratio was strongly statistically significant (p-value = 0.0000) at 1% level and had positive relation with profitability. Likewise, size was also strongly statistically significant (p-value = 0.0002) at 1% level and had positive relation with profitability. However according the findings of the study loan to deposit, spread and growth had a negative and statistically insignificant relation with profitability with p-values 0.4720, 0.5759 and 0.2172 respectively.

## 4.5. Discussions of the Results

The preceding sections of the chapter presented the overall results of the study. This section presents the discussion of the detailed analyses of the results for each explanatory variable and their impact on profitability of banks the together with the evidences to uphold or reject the hypotheses formulated. This discussion also includes the evaluation of findings of previous empirical and theoretical evidences.

**Debt to Equity Ratio**

The result of fixed effect model table 4.7 indicated that debt to equity ratio had negative relationship with profitability with strongly statistically significant (p-value = 0.0066) at 1% level. The negative co-efficient of the variable indicated in the table as -0.0008 implied that debt to equity ratio had negative relationship with ROA. Debt to Equity ratio is negatively correlated to profitability ratios which imply that if the debt content is increased aggressively it will adversely impact the profitability. Also, the companies are exposing themselves to more risk and they can lose control if they do it.

The negative co-efficient of 0.00008 implies that keeping the other thing constant, if debt to equity ratio variable should increase by a unit, the bank's profit as assessed by ROA would decrease by 0.0008. This result implies that as a bank's debt level increases its return on asset is expected to decline because the excessive use of the leverage might impose high interest costs.

The null hypothesis (H1) formulated was that there is no significant relationship between capital structure proxy by debt to equity and profitability of commercial banks in Ethiopia. Based on the findings of the study there is sufficient evidence to reject the null hypothesis. Thus the alternative hypothesis cannot be rejected. Therefore it is possible to conclude that in the period under study there was significant negative relationship between capital structure and profitability of the commercial banks in Ethiopia.

This result of the study supports the agency theory which posits that when companies tend to overhang debt finance, this action reduces agency problem which in turn leads the ROA to fall (Leonard & Mwasa, 2014). According to the agency cost theory, agency problem can be reduced through raising company debt level (Roshan , 2009). Similarly Bereger & Patti (2006) argued that a high debt level encourages the manager to work for the company's interest. Among the empirical studies, the ones by Enekwe et al (2014) and Khalid et al (2013) revealed the same result while the study by Tamirat (2015) showed a contrasting result.

**Debt to Asset Ratio**

As the results of fixed effect model table 4.7 indicate capital structure as measured by total debt to total asset had positive relationship with profitability which means an increase in debt to asset results in an increase in profitability of sampled commercial banks in Ethiopia. The positive co-efficient of 0.0187 implies that a one unit change in debt to asset, keeping the other things constant had resulted 0.0187 unit change on the level of profitability in the same direction. The p-value of 0.0116 means that the positive relationship between debt to asset ratio and profitability was highly significant at 5% significance level.

The null hypothesis (H2) was that there is no significant relationship between capital structure proxy by debt to asset ratio and profitability commercial banks in Ethiopia. According to the findings of this study, there is sufficient evidence to reject the null hypothesis and take up the

alternative hypothesis. There is therefore a significant positive relationship between capital structure and profitability of the Ethiopian banking industry.

It can therefore be concluded that in Ethiopia, debt to asset is a significant variable in influencing the profitability of sampled banks in the positive way. This result also indicates that debt financing has a positive impact on profitability of the Ethiopian commercial banking sector. The possible reason for this result could be firms that issue debt financing pay interest which is tax deductible and provides a tax shield in the form of lower tax exposure, whereas equity financing is not entitled to such tax deductibility. In other words the interest deducted from before interest and tax earnings (EBIT), which brings about tax advantage because taxable income become less and hence less corporate tax payment for the firm. Thus tax exempted on debt interest payment helps as additional re-investments opportunity for the banks.

The result of this study was consistent with the tradeoff theory which suggests that highly leveraged bank firms perform better when compared with less leveraged bank firms. Highly leveraged companies were also able to reduce agency cost by the debt compelling managers to act more in the interest of shareholders thereby increasing the value of the firm, (Berger and Bonaccorsi di Patti, 2006). In this vein Modigliani and Miller (1958) argued that a higher level of debt can improve the value of a firm if it can borrow at a lower interest rate than the cost of equity from investors. In terms of profitability, trade-off theory predicts that more profitable firms should mean more debt serving capacity and more taxable income to shield; therefore in their view a higher debt ratio will be anticipated.

In relation to this Fama and French (2002) state that using this theory the optimal capital structure can be identified through the benefits of debt tax deductibility of interest and cost of bankruptcy and agency cost. The other relevant point here is the relationship between capital structure and bank performance as posited by the tradeoff theory there is a positive relationship between debt and performance that performance affects debt. Similarly Anarfo (2015) says "banks' capital structure is a strong driver of their profitability.

The finding of this research was also found to be consistent with empirical studies conducted in other parts of the world and in Africa. The findings of this study were found to be consistent with findings of Tamirat (2015) a study conducted in Ethiopia ,Sultan (2015), Musah (2018) and

Barik and Messar (2018) empirical studies conducted in Iraq, Adelopo et.al ( 2018 ), Anarfo (2015) and Musah (2017) a study conducted in Ghana. However this result capital structure as measured by DAR was found to be contrasting with the findings of Aragaw (2015), Tigist (2018) and Muhammed et.al (2015).

**Interest Coverage Ratio**

The result of fixed effect model table 4.7 indicates that capital structure as measured by interest coverage ratio had positive relationship with profitability. This means that an increase in interest coverage ratio results in an increase in profitability of sampled commercial banks in Ethiopia.

The positive co-efficient of 0.0141 implies that a one unit change in interest coverage ratio, keeping the other things constant had resulted a 0.0141 unit change on the level of profitability in same direction. The p-value of 0.0000 meant that the positive relationship between interest coverage ratio and profitability is highly significant at 1% significance level. It can therefore be concluded that in Ethiopia, interest coverage ratio is a significant variable in influencing the profitability of sampled banks in the positive way. Whereas, the positive relationship also indicates that commercial banks in Ethiopia borrow the fund by low cost.

The null hypothesis (H3) was that there is no significant relationship between capital structure proxy by interest coverage ratio and profitability commercial banks in Ethiopia. On the basis of the findings of this study, there is sufficient evidence to reject the null hypothesis and conclude that there is a significant positive relationship between capital structure and profitability of the Ethiopian commercial banking industry.

Trade off theory suggests that firms that can meet their short term obligations effectively should borrow more debt, hence, a positive relationship. So the finding of the study is in line with tradeoff theory. Among the studies conducted in Ethiopia using ICR as an explanatory variable the result of the study was found to be consistent with Tigist (2018), Tamirat (2015) , Muhammed (2017), Enekwe, et al (2014) and Khalid A., et al (2013),.

**Loan to Deposit ratio**

As indicated by the results of the fixed effect model table 4.7 liquidity as measured by loan to deposit had negative relationship with profitability and statistically insignificant (p-value = 0.4720) at 1% level.

The low co-efficient of -0.009331 implies that liquidity has weak impact on the profitability of commercial banks and any increase in liquidity leads to poor profitability. This result also shows that an increase in amount of loan advances to customers from deposit financing has a negative but insignificant impact on profitability of commercial banks in Ethiopia. The possible reason for this could be that the more risky customer included into the portfolio by the banks; the higher the loan defaults (NPL), the less chance of profitability will be.

The null hypothesis (H4) was that there is no significant relationship between capital structure proxy by loan to deposit and profitability commercial banks in Ethiopia. On the basis of the findings of this study, there is sufficient evidence not to reject the null hypothesis. Thus the alternative hypothesis can be rejected. On the basis of the findings of the study there is insignificant negative relationship between capital structure measured by loan to deposit ratio and profitability of the Ethiopian banking industry. This result was found to be consistent with the findings of empirical research by Shibru (2012) and Yigermal, M. E. (2017) and contrasting with Argaw (2015).

**Size**

The result of fixed effect model table 4.7 revealed that banks size had a statistically significant positive relationship with profitability with a (p- value = 0.0002) a 1% significance level. The result means that an increase in size results in an increase in profitability of sampled commercial banks in Ethiopia. The positive co-efficient of 0.0059 implies that a one unit change in debt to asset, keeping the other things constant had resulted 0.0059 unit change on the level of profitability in same direction. The p-value of 0.0002 meant that the positive relationship between size and profitability is highly significant at 1% significance level.

The results suggested that the bigger the bank, the more economies of scale and hence the more the profitability. The possible reason for this could be that, larger banks have higher economies

of scale and lower variance of earnings which results in increased profitability. The tradeoff theory predicts a positive relationship between firm size and their level of leverage (Titman and Wessels, 1988). Thus, according to the argument of the tradeoff theory a larger firm uses more debt than smaller firms due to lower bankruptcy risk as the size of the firm increases. So the finding of the study is in line with the tradeoff theory.

It can therefore be concluded that in Ethiopia, size is a significant variable in influencing the profitability of sampled banks in the positive way. The result was found to be consistent with Aragaw (2015) Tigist (2018), Shibru (2012), Yigermal, M. E. (2017), Tamirat (2015), Titman & Wessels, (1988), Mohammed (2014) and Weldemichael (2012).

**Spread**

As shown in the results of fixed effects estimation model table 4.7 there was a negative and statistically insignificant relationship between profitability and spread of banks. The negative coefficient (-0.0327) of spread indicates a negative relationship between spread and profitability.

The negative effect of spread on banks profitability is a controversial result and against the reality. As indicated by previous researchers spread has positive and significant effect on commercial banks performance. The negative effect of spread on banks profitability observed in the above fixed effects estimation model table 4.7, might be because of nonperforming loans and banks less competitiveness resulted from higher cost of credit. Banks with higher lending rate may fail to attract borrowers and borrowers may fail to repay their obligation.

The results indicated that there was no significant negative relationship between spread and profitability of the Ethiopian banking industry. The result was consistent with previous empirical findings of Yigermal, M. E. (2017), Vickery (2011) and Irungu (2013).

**Growth**

According to the results of fixed effects estimation model table 4.7 there was a negative and statistically insignificant relationship between profitability and growth of commercial banks in Ethiopia. The negative coefficient (-0.00105) of growth indicates a negative relationship between growth and profitability. However, this negative relationship was found statistically insignificant

with the p-value of 0.2172. The insignificant result indicates that growth was not considered as a proper explanatory variable of capital structure in Ethiopian banking industry.

The possible reason for this may be that the measure (percentage change in total asset) used in this study did not reflect the growth of banks fully. Other more significant results might be obtained by using another measure (market-to-book ratio) for growth which was found to be difficult to use in the context of the commercial banking industry in Ethiopia where there is no active secondary market.

In general as for the role of the controlling variable (growth) the study concludes that it had no significant relationship with the profitability of commercial banks in Ethiopia.This result was consistent with the previous empirical findings of Titman and Wessels (1988) and Ahmed et al., (2010) conducted in other countries. From the ones conducted in Ethiopia the finding of the study on the relationship between growths of assets was found to be consistent with Shibru (2011) and in consistent with Aragaw (2015) and Mohammed (2014).

# CHAPTER FIVE
# CONCLUSION AND RECOMMENDATION

## 5.1. Conclusion

This study attempted to answer two research questions. One what the composition of capital stru cture was in the sampled commercial banks and two whether there was any relationship between capital structure and the profitability of these banks. To that end the study formulated one null hy pothesis and one alternative hypothesis. The necessary panel data were collected from annual au dited financial statements and reports of twelve Commercial banks of six years over the time peri od 2012 to 2018. The study used fixed effect regression model to estimate the relationship betwe en the firm capital structure and firm profitability.

The study used ROA as dependent variable to measure profitability, Debt to Equity Ratio (DER), Debt to Asset Ratio (DAR), Loan to Deposit (LD) and Interest Coverage Ratio (ICR) as indepen dent variables and bank size, spread and growth as control variables. Regarding the composition of capital structure, the mean value of DAR of the banks was calculated to be 86.31 %. In other words, it was observed that 86.31% of the total capital of commercial banks in Ethiopia in the pe riod under study was made up of debt. Thus the study concludes that the total capital structure of commercial banks in Ethiopia is composed of more debt than equity and that they are highly leve red institutions.

Based on the findings of the study it is possible to conclude that in the period under study there was significant negative relationship between capital structures as measured by debt to equity rat io (DER) and profitability of the commercial banks in Ethiopia. However the study found out a st rong positive relationship between Debt to asset ratio and profitability. It can therefore be conclu ded that in Ethiopia, debt to asset is a significant variable in influencing the profit profitability of sampled banks in the positive way. This result also supports the tradeoff theory and Agency cost theory.

As for the other variables according to the findings of the study size and Interest coverage ratio (I CR) had a positive relation with profitability whereas Loan to deposit (LD), spread and growth h ad negative relations. It can therefore be concluded that size and interest coverage ratio are signi

ficant variables in positively influencing the profitability of commercial banks in Ethiopia. Based on its findings the study also concludes that there is a statistically insignificant negative relations hip between Loan to deposit (LD), Spread and growth on one side and profitability on the other.

## 5.2. Recommendation

- As has been said above much of the capital structure of commercial banks in Ethiopia is composed of debt therefore the researcher believes that the commercial banks should use tax benefits particularly associated with debts that are tax deductible. Thus using such tax exempted amount helps as an additional re-investment opportunity for the banks.

- The existence of significant and positive impact of bank size and interest coverage ratio can be taken as a good signal for commercial banks to scale advantage, diversify their risk, mobilize deposit and satisfy their customers' needs.

- The negative and significant debt to equity ratio implies that commercial banks might not get more equity and this may increase the overall risk on their performance. Besides a negative equity ratio is unattractive to investors. So commercial banks should maintain the right proportion of debt and equity used in capital structure to attain a maximum profit with a minimum cost of capital and minimized financial distress cost.

- The results of the regression analysis indicated that the variables: DER, DAR, ICR and SIZE were significantly related to profitability. Therefore, banks should pay greater attention to these significant variables to attain optimal capital structure and firm value.

- This study assessed only firm specific variables of capital structure of commercial banks in Ethiopia because of resource and time limitation. Thus, future researchers may address this deficiency by including external variables like inflation, gross domestic product (GDP), Interest rate, and tax in order to demonstrate the impact of both internal and external variables on the choice of capital structure.

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**Annex I: Branch Network & Capital of the Banking System**

| | **Table4.5: Branch Network & Capital of the Banking System at the close of Jane 30,2018** | | | | |
|---|---|---|---|---|---|
| | Current year | 2020 | | | |
| **S.no** | **Bank Name** | **Year of Establishment** | **Number Year of Experience** | **Market share 2017/18 (5)** | **Capital share 2017/18 (%)** |
| 1 | Commercial Bank of Ethiopia | 1963 | 57 | 28.90 | 51.10 |
| 2 | Development Bank of Ethiopia | 1901 | 119 | 2.40 | 9.60 |
| 3 | Awash International Bank | 1994 | 26 | 8.00 | 4.90 |
| 4 | Dashen Bank | 2003 | 17 | 8.00 | 4.30 |
| 5 | Bank of Abyssinia | 1996 | 24 | 6.00 | 3.80 |
| 6 | Wegagen Bank | 1997 | 23 | 6.10 | 3.70 |
| 7 | United Banks | 1998 | 22 | 4.90 | 3.00 |
| 8 | Nib International Bank | 1999 | 21 | 4.80 | 3.50 |
| 9 | Cooperative Bank of Oromia | 2005 | 15 | 7.00 | 2.20 |
| 10 | Lion International Bank | 2006 | 14 | 4.40 | 1.70 |
| 11 | Oromia International Bank | 2008 | 12 | 5.50 | 1.60 |
| 12 | Zemen Bank | 2009 | 11 | 0.50 | 1.90 |
| 13 | Bunna International Bank | 2009 | 11 | 3.70 | 2.30 |
| 14 | Berhan International Bank | 2010 | 10 | 3.50 | 1.80 |
| 15 | Abay Bank | 2010 | 10 | 3.40 | 1.80 |
| 16 | Addis International Bank | 2011 | 9 | 1.20 | 0.90 |
| 17 | Debub Global Bank | 2012 | 8 | 0.90 | 0.70 |
| 18 | Enat Bank | 2013 | 7 | 0.80 | 1.20 |
| | Grand Total Banks | | | 100.00 | 100.00 |

Source: National Bank of Ethiopia report (2017/2018)

Note :- From the above Annex I NBE 2017/18 report, the sample banks market share in terms of branch network and capital was 91.3 % and 85.8% respectively (see Annex I). Besides, they have good experience in the banking operation and the sample taken also 66.67 % of the total population of 18 commercial banks in the country. Hence, it is believed to make generalization from sample to population.

## Annex II: Correlation Matrix

| Variable | ROA | DER | DAR | LD | ICR | SIZE | SPREAD | GROWTH |
|---|---|---|---|---|---|---|---|---|
| ROA | 1 | -0.228724 | 0.088968 | 0.041626 | 0.590437 | -0.364005 | -0.175553 | 0.054574 |
| DER | -0.228724 | 1 | 0.095143 | -0.192896 | 0.320189 | 0.709875 | -0.301868 | -0.180827 |
| DAR | 0.088968 | 0.095143 | 1 | -0.129216 | -0.125274 | 0.045599 | 0.185455 | -0.167927 |
| LD | 0.041626 | -0.192896 | -0.129216 | 1 | 0.045746 | 0.040215 | 0.279963 | 0.346846 |
| ICR | 0.590437 | 0.320189 | -0.125274 | 0.045746 | 1 | -0.004698 | -0.333797 | 0.058551 |
| SIZE | -0.364005 | 0.709875 | 0.045599 | 0.040215 | -0.004698 | 1 | -0.207841 | -0.190219 |
| SPREAD | -0.175553 | -0.301868 | 0.185455 | 0.279963 | -0.333797 | -0.207841 | 1 | -0.166106 |
| GROWTH | 0.054574 | -0.180827 | -0.167927 | 0.346846 | 0.058551 | -0.190219 | -0.166106 | 1 |

## Annex III: Heteroskedasticity Test: White

Heteroskedasticity Test: White

| | | | |
|---|---|---|---|
| F-statistic | 0.503460 | Prob. F(7,64) | 0.8286 |
| Obs*R-squared | 3.757816 | Prob. Chi-Square(7) | 0.8072 |
| Scaled explained SS | 4.713961 | Prob. Chi-Square(7) | 0.6948 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/01/20 Time: 02:12
Sample: 1 72
Included observations: 72

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 4.11E-05 | 4.32E-05 | 0.951296 | 0.3450 |
| DER^2 | -7.05E-08 | 7.41E-08 | -0.951989 | 0.3447 |
| DAR^2 | -3.08E-05 | 4.21E-05 | -0.730756 | 0.4676 |
| LD^2 | -2.40E-05 | 3.79E-05 | -0.632538 | 0.5293 |
| ICR^2 | 1.64E-06 | 1.73E-06 | 0.951454 | 0.3450 |
| SIZE^2 | 6.71E-08 | 2.38E-07 | 0.282526 | 0.7785 |
| SPREAD^2 | -0.00158 | 0.002984 | -0.529493 | 0.5983 |
| GROWTH^2 | 2.42E-05 | 0.000124 | 0.194994 | 0.8460 |

| | | | |
|---|---|---|---|
| R-squared | 0.052192 | Mean dependent var | 2.00E-05 |
| Adjusted R-squared | -0.051475 | S.D. dependent var | 3.58E-05 |
| S.E. of regression | 3.68E-05 | Akaike info criterion | -17.48023 |
| Sum squared resid | 8.65E-08 | Schwarz criterion | -17.22727 |
| Log likelihood | 637.2883 | Hannan-Quinn criter. | -17.37952 |
| F-statistic | 0.50346 | Durbin-Watson stat | 2.107574 |
| Prob(F-statistic) | 0.828562 | | |

## Annex VI: Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

| | | | |
|---|---|---|---|
| F-statistic | 1.478121 | Prob. F(2,62) | 0.2360 |
| Obs*R-squared | 3.276812 | Prob. Chi-Square(2) | 0.1943 |

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 06/01/20 Time: 02:17

Sample: 1 72

Included observations: 72

Presample missing value lagged residuals set to zero.

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.00239 | 0.010513 | -0.227376 | 0.8209 |
| DER | -2.84E-05 | 0.000258 | -0.110172 | 0.9126 |
| DAR | -3.55E-05 | 0.008168 | -0.004345 | 0.9965 |
| LD | -0.001084 | 0.004009 | -0.270275 | 0.7878 |
| ICR | 0.000317 | 0.001283 | 0.24719 | 0.8056 |
| SIZE | 0.000162 | 0.000684 | 0.236952 | 0.8135 |
| SPREAD | 0.016495 | 0.039603 | 0.416511 | 0.6785 |
| GROWTH | 0.001166 | 0.008169 | 0.142677 | 0.8870 |
| RESID(-1) | 0.224943 | 0.132441 | 1.698442 | 0.0944 |
| RESID(-2) | -0.063174 | 0.132445 | -0.476984 | 0.6351 |

| | | | |
|---|---|---|---|
| R-squared | 0.045511 | Mean dependent var | 4.52E-19 |
| Adjusted R-squared | -0.093044 | S.D. dependent var | 0.004501 |
| S.E. of regression | 0.004705 | Akaike info criterion | -7.751989 |
| Sum squared resid | 0.001373 | Schwarz criterion | -7.435786 |
| Log likelihood | 289.0716 | Hannan-Quinn criter. | -7.626108 |
| F-statistic | 0.328471 | Durbin-Watson stat | 1.973203 |
| Prob(F-statistic) | 0.96236 | | |

**Annex IV: Panel Data**

| NO | YEAR | ROA | ROE | DER | DAR | LD | ICR | SIZE | SPREAD | GROWTH | NAME |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2013 | 0.0379 | 0.2803 | 7.8153 | 1.0578 | 0.6146 | 2.7978 | 9.6063 | 0.0345 | 0.1967 | AIB |
| 2 | 2014 | 0.0354 | 0.2725 | 7.7251 | 0.9741 | 0.6101 | 2.7422 | 9.9049 | 0.0297 | 0.2581 | AIB |
| 3 | 2015 | 0.0294 | 0.2298 | 7.1271 | 0.9227 | 0.6740 | 2.3481 | 10.0804 | 0.0320 | 0.1609 | AIB |
| 4 | 2016 | 0.0278 | 0.2154 | 7.1322 | 0.9191 | 0.6767 | 2.2612 | 10.2959 | 0.0393 | 0.1939 | AIB |
| 5 | 2017 | 0.0280 | 0.2367 | 8.6110 | 0.9565 | 0.7380 | 2.4772 | 10.6448 | 0.0399 | 0.2946 | AIB |
| 6 | 2018 | 0.0307 | 0.3131 | 10.0149 | 0.8825 | 0.7204 | 2.3279 | 10.9200 | 0.0496 | 0.2405 | AIB |
| 7 | 2013 | 0.0213 | 0.1201 | 4.7590 | 0.8264 | 0.6145 | 2.3513 | 7.6950 | 0.0188 | 0.4152 | BIB* |
| 8 | 2014 | 0.0180 | 0.0962 | 4.0759 | 0.8032 | 0.5889 | 2.2770 | 7.9422 | 0.0502 | 0.2190 | BIB* |
| 9 | 2015 | 0.0297 | 0.1619 | 4.7401 | 0.8258 | 0.6113 | 2.8850 | 8.3361 | 0.0382 | 0.3256 | BIB* |
| 10 | 2016 | 0.0468 | 0.2975 | 5.7874 | 0.8527 | 0.6989 | 3.6237 | 8.8813 | 0.0446 | 0.4203 | BIB* |
| 11 | 2017 | 0.0373 | 0.2241 | 4.5642 | 0.8203 | 0.6920 | 3.0725 | 9.2581 | 0.0482 | 0.3139 | BIB* |
| 12 | 2018 | 0.0267 | 0.1604 | 5.3897 | 0.8435 | 0.6621 | 1.9846 | 9.5517 | 0.0453 | 0.2544 | BIB* |
| 13 | 2013 | 0.0265 | 0.1398 | 4.6850 | 0.8239 | 0.6135 | 2.6977 | 7.6631 | 0.0357 | 0.3587 | BIB** |
| 14 | 2014 | 0.0311 | 0.1795 | 4.8285 | 0.8284 | 0.6243 | 2.9426 | 8.0103 | 0.0458 | 0.2933 | BIB** |
| 15 | 2015 | 0.0358 | 0.2252 | 5.6395 | 0.8494 | 0.6906 | 3.0228 | 8.4118 | 0.0486 | 0.3306 | BIB** |
| 16 | 2016 | 0.0331 | 0.2288 | 6.0972 | 0.8592 | 0.6745 | 2.4397 | 8.8278 | 0.0452 | 0.3403 | BIB** |
| 17 | 2017 | 0.0242 | 0.1740 | 6.2581 | 0.8622 | 0.6954 | 2.0455 | 9.1922 | 0.0358 | 0.3054 | BIB** |
| 18 | 2018 | 0.0276 | 0.1890 | 5.5650 | 0.8477 | 0.6878 | 2.0972 | 9.4743 | 0.0550 | 0.2458 | BIB** |
| 19 | 2013 | 0.0236 | 0.2148 | 8.1728 | 0.8937 | 0.5534 | 2.3844 | 9.2232 | 0.0337 | 0.1866 | BOA |
| 20 | 2014 | 0.0418 | 0.3394 | 6.3752 | 0.8644 | 0.5564 | 2.6564 | 9.3305 | 0.0434 | 0.1017 | BOA |
| 21 | 2015 | 0.0234 | 0.1747 | 6.5488 | 0.8675 | 0.5311 | 2.0084 | 9.5228 | 0.0454 | 0.1750 | BOA |
| 22 | 2016 | 0.0236 | 0.1833 | 6.9212 | 0.8738 | 0.5876 | 2.0330 | 9.7308 | 0.0466 | 0.1878 | BOA |
| 23 | 2017 | 0.0271 | 0.2268 | 7.7182 | 0.8853 | 0.6728 | 2.2284 | 10.1395 | 0.0422 | 0.3355 | BOA |
| 24 | 2018 | 0.0196 | 0.1574 | 6.5336 | 0.8672 | 0.6975 | 1.7250 | 10.3730 | 0.0679 | 0.2082 | BOA |
| 25 | 2013 | 0.0343 | 0.7283 | 20.7961 | 0.9543 | 0.4695 | 7045 | 12.1915 | 0.0158 | 0.1570 | CBE |
| 26 | 2014 | 0.0306 | 0.6765 | 21.6590 | 0.9655 | 0.4538 | .8188 | 12.3901 | 0.0176 | 0.0911 | CBE |
| 27 | 2015 | 0.0188 | 0.6882 | 18.5469 | 0.3831 | 0.5972 | 3.3825 | 13.3456 | -0.0125 | 0.2851 | CBE |
| 28 | 2016 | 0.0164 | 0.5985 | 24.9351 | 0.9614 | 0.4778 | .8882 | 12.8580 | 0.0235 | 0.1422 | CBE |
| 29 | 2017 | 0.0200 | 0.2947 | 9.9994 | 0.9091 | 0.4115 | .2695 | 13.1023 | 0.0181 | 0.2445 | CBE |
| 30 | 2018 | 0.0101 | 0.1170 | 11.1573 | 0.9177 | 0.3972 | .6784 | 13.2602 | 0.0161 | 0.2179 | CBE |
| 31 | 2013 | 0.0326 | 0.3133 | 8.6530 | 0.8964 | 0.0056 | 2.6595 | 8.3584 | 0.0252 | 0.1128 | DB |
| 32 | 2014 | 0.0342 | 0.3069 | 7.4547 | 0.8817 | 0.0053 | .6707 | 8.4344 | 0.0281 | 0.1009 | DB |
| 33 | 2015 | 0.0312 | 0.2641 | 7.4695 | 0.8819 | 0.0058 | .4444 | 8.4683 | 0.0305 | 0.1131 | DB |
| 34 | 2016 | 0.0273 | 0.2315 | 7.5104 | 0.8825 | 0.0056 | .2832 | 8.6894 | 0.0284 | 0.1334 | DB |
| 35 | 2017 | 0.0239 | 0.2057 | 7.6714 | 0.8847 | 0.0065 | .0635 | 8.8171 | 0.0287 | 0.1747 | DB |
| 36 | 2018 | 0.0232 | 0.1884 | 6.7430 | 0.8709 | 0.0065 | .7980 | 9.0230 | 0.0392 | 0.2378 | DB |
| 37 | 2013 | 0.0412 | 0.2265 | 4.4294 | 0.8158 | 0.6259 | 3.7014 | 6.4210 | 0.0426 | 0.1629 | LIB |
| 38 | 2014 | 0.0295 | 0.1651 | 4.7554 | 0.8262 | 0.5736 | 2.7198 | 6.6537 | 0.0506 | 0.1857 | LIB |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 | 2015 | 0.0318 | 0.2077 | 6.1271 | 0.8597 | 0.6350 | 3.1146 | 7.2256 | 0.0365 | 0.3833 | LIB |
| 40 | 2016 | 0.0281 | 0.2074 | 6.5891 | 0.8682 | 0.6795 | 2.6761 | 7.4655 | 0.0477 | 0.2783 | LIB |
| 41 | 2017 | 0.0281 | 0.2132 | 6.5754 | 0.8680 | 0.6252 | 2.4579 | 7.4944 | 0.0590 | 0.2603 | LIB |
| 42 | 2018 | 0.0309 | 0.2399 | 6.9163 | 0.8737 | 0.6496 | 2.1333 | 7.7630 | 0.0616 | 0.2335 | LIB |
| 43 | 2013 | 0.0344 | 0.1875 | 4.4892 | 0.8178 | 0.6826 | 3.1178 | 9.1209 | 0.0404 | 0.0950 | NIB |
| 44 | 2014 | 0.0299 | 0.1638 | 4.4711 | 0.8172 | 0.6825 | 3.1124 | 9.2824 | 0.0350 | 0.1491 | NIB |
| 45 | 2015 | 0.0281 | 0.1628 | 5.0883 | 0.8358 | 0.7053 | 2.4669 | 9.4922 | 0.0372 | 0.1893 | NIB |
| 46 | 2016 | 0.0268 | 0.1660 | 5.2870 | 0.8409 | 0.6047 | 2.2538 | 9.6697 | 0.0427 | 0.1626 | NIB |
| 47 | 2017 | 0.0241 | 0.1621 | 6.1155 | 0.8595 | 0.6525 | 2.2852 | 9.9532 | 0.0445 | 0.2469 | NIB |
| 48 | 2018 | 0.0216 | 0.1626 | 6.8952 | 0.8733 | 0.6244 | 1.7523 | 10.1920 | 0.0525 | 0.2124 | NIB |
| 49 | 2013 | 0.0200 | 0.1359 | 6.1425 | 0.8600 | 0.5315 | 2.4372 | 8.2716 | 0.0300 | 0.2873 | OIB |
| 50 | 2014 | 0.0306 | 0.2374 | 7.2184 | 0.8783 | 0.5059 | 3.0263 | 8.7245 | 0.0482 | 0.3642 | OIB |
| 51 | 2015 | 0.0192 | 0.1741 | 7.8716 | 0.8134 | 0.6456 | 2.3763 | 9.1627 | 0.0392 | 0.3548 | OIB |
| 52 | 2016 | 0.0149 | 0.1348 | 7.5611 | 0.8832 | 0.5526 | 1.9364 | 9.3309 | 0.0606 | 0.1548 | OIB |
| 53 | 2017 | 0.0209 | 0.1933 | 8.7817 | 0.8978 | 0.5349 | 2.1520 | 9.6985 | 0.0439 | 0.3076 | OIB |
| 54 | 2018 | 0.0363 | 0.3419 | 8.1828 | 0.8911 | 0.5862 | 2.7256 | 10.0773 | 0.0525 | 0.3153 | OIB |
| 55 | 2013 | 0.0228 | 0.1856 | 7.3068 | 0.8796 | 0.5842 | 2.2371 | 9.2081 | 0.0769 | 0.2024 | UB |
| 56 | 2014 | 0.0181 | 0.1428 | 6.2235 | 0.8255 | 0.5693 | 2.0100 | 9.3823 | 0.0770 | 0.1454 | UB |
| 57 | 2015 | 0.0214 | 0.1725 | 7.5165 | 0.8826 | 0.5811 | 1.9284 | 9.5723 | 0.0844 | 0.1031 | UB |
| 58 | 2016 | 0.0214 | 0.1804 | 7.3329 | 0.8800 | 0.6546 | 1.8147 | 9.7567 | 0.0776 | 0.1098 | UB |
| 59 | 2017 | 0.0195 | 0.1664 | 7.7067 | 0.8851 | 0.7268 | 1.7699 | 9.9944 | 0.0678 | 0.2509 | UB |
| 60 | 2018 | 0.0230 | 0.2098 | 8.4897 | 0.8946 | 0.6528 | 1.6885 | 10.2411 | 0.0859 | 0.1041 | UB |
| 61 | 2013 | 0.0366 | 0.1999 | 4.6783 | 0.8239 | 0.6212 | 3.6276 | 9.2490 | 0.0343 | 0.1969 | WB |
| 62 | 2014 | 0.0282 | 0.1534 | 4.3764 | 0.8347 | 0.5492 | 2.7368 | 9.3275 | 0.0802 | 0.0755 | WB |
| 63 | 2015 | 0.0282 | 0.1546 | 4.6791 | 0.8239 | 0.6151 | 2.5543 | 9.5260 | 0.0296 | 0.1801 | WB |
| 64 | 2016 | 0.0251 | 0.1439 | 4.7702 | 0.8267 | 0.6775 | 2.3968 | 9.6921 | 0.0291 | 0.1531 | WB |
| 65 | 2017 | 0.0287 | 0.1727 | 5.2427 | 0.8398 | 0.7301 | 2.5169 | 9.9499 | 0.0285 | 0.2272 | WB |
| 66 | 2018 | 0.0328 | 0.2210 | 6.1582 | 0.8603 | 0.7338 | 2.3962 | 10.2180 | 0.0400 | 0.2352 | WB |
| 67 | 2013 | 0.0334 | 0.2433 | 5.5839 | 0.8483 | 0.5467 | 2.2317 | 8.0859 | 0.0017 | 0.2630 | ZB |
| 68 | 2014 | 0.0513 | 0.3198 | 4.9769 | 0.8326 | 0.4718 | 2.9266 | 8.2751 | 0.0174 | 0.1723 | ZB |
| 69 | 2015 | 0.0348 | 0.2157 | 5.3759 | 0.8431 | 0.5641 | 2.4667 | 8.4917 | 0.0173 | 0.1948 | ZB |
| 70 | 2016 | 0.0331 | 0.2296 | 6.3593 | 0.8641 | 0.5930 | 2.3063 | 8.9057 | 0.0089 | 0.3390 | ZB |
| 71 | 2017 | 0.0293 | 0.2153 | 6.3553 | 0.8640 | 0.5422 | 2.2091 | 9.1767 | 0.0124 | 0.2374 | ZB |
| 72 | 2018 | 0.0245 | 0.1770 | 6.1461 | 0.8601 | 0.5095 | 1.7749 | 9.4326 | 0.0178 | 0.2258 | ZB |

NOTE: - Berhan International Bank Sc (BIB*), Bunna International Bank S.c (BIB**)