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Determinants of Capital Structure of Commercial Banks in Ethiopia

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Determinants of Capital Structure of Commercial Banks in Ethiopia

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Accounting and Finance**

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submitted in partial fulfillment of the requirements for the Degree of Master of
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I, undersigned declare that this thesis is my original work. Furthermore, all sources of materials used for the thesis had been duly acknowledged.

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LIST OF ACRONYMS

AIB	Awash International Bank
BOA	Bank of Abyssinia
CBE	Commercial Bank of Ethiopia
CBO	Cooperative Bank of Oromia
CLRM	Classical Linear Regression Model
DB	Dashen Bank
DW	Durbin Watson
FE	Fixed Effect
GR	Growth
INF	Inflation
LEV	Leverage
LIB	Lion International Bank
LQ	Liquidity
MM	Modigliani and Miller
NBE	National Bank of Ethiopia
NIB	Nib International Bank
OLS	Ordinary Least Square
PT	Profitability
RE	Random Effect
TANG	Tangibility of Fixed Assets
UB	United Bank
WB	Wegagen Bank

Abstract

The main objective of this study is to analyze internal and external factors determining capital structure decisions of commercial banks in Ethiopia. To achieve the objective, the researcher used only secondary data obtained from the annual financial statements of selected commercial banks in Ethiopia and National Bank of Ethiopia (NBE). In this study, one dependent variable (leverage) and six independent variables, i.e. growth, size of the firm, tangibility of assets, liquidity, inflation and profitability were employed. Explanatory research design and purposive sampling method were employed in this study. The balanced panel data was analyzed by using descriptive, correlation and multiple regression analyses.. The findings show that profitability, size, tangibility of assets and growth of the banks are important determinants of capital structure of banks in Ethiopia. However, liquidity and inflation are found to have no statistically significant impact on the capital structure of banks in Ethiopia. In addition, the results of the analysis indicate that pecking order theory is pertinent theory in Ethiopian banking industry, whereas there are little evidence to support static trade-off theory and the agency cost theory. Therefore, banks should give consideration to profitability, size, growth and tangibility of assets when they determine their optimum capital structure.

Keywords: *Capital Structure, Determinants, Commercial Banks and Panel Data*

CHAPTER ONE

1. INTRODUCTION

This chapter introduces the research subject briefly and outlines the research background, incorporating the problems and results from the past studies. The problem statement is given and research objectives have been clearly described and based on which, hypotheses are formed and model is specified. Apart from this, it also identifies the significance, scope & limitations of the study.

1.1 Background of the Study

One of the major objectives of a firm is to maximize the wealth of owners or shareholders of the firm (Saad, 2010). The wealth of shareholders in turn is defined as the current price of the firm's outstanding shares Goyal (2013). In order to achieve this objective firm's management should take rational financing decisions regarding optimal capital structure which in turn would minimize its cost of capital (Goyal, 2013).

The capital structure of a firm describes the way in which a firm raises capital needed to establish and expand its business activities Mohammed (2014). It is a mixture of various types of equity and debt capital a firm maintained resulting from the firms financing decisions Mohammed (2014). In one way or another, business activity must be financed. Without finance to support their fixed assets and working capital requirements, business could not exist Mohammed (2014). In all aspects of capital investment decision, the capital structure decision is the vital one since the profitability of an enterprise is directly affected by such decision. Therefore, proper care and attention need to be given while determining capital structure decision (Mohammed, 2014).

Capital structure decisions are among the most important financing decisions companies would encounter. Under the perfect capital market assumption, if there is no bankruptcy cost and without taxes, the firm's value is independent with the capital structure Modigliani and Miller (1958). Debt can reduce the tax to pay, so the best capital structure of enterprise should be one hundred percent of the debt (Modigliani & Miller, 1958). Since the seminal work of Modigliani and Miller in 1958, several theories have been developed to explain the capital structure of a firm including the Pecking

order theory, Static Trade-off theory and agency cost theory Buferna et al (2005). The firm's capital structure decision will affect its competitiveness among its peers. Since, the capital structure decisions affect profitability directly; care and attention must be given while determining capital structure decision (Velnampy et al., 2012).

The trade- off theory Myers (1984) states that the optimal debt ratio is set by balancing the trade-off between the benefit and cost of debt. According to this theory, the optimal capital structure is achieved when the marginal present value of the tax shield on additional debt is equal to the marginal present value of the financial distress cost on additional debt (Myers, 1984). The pecking order theory Myers and Majluf(1984) emphasizes the information asymmetry between the firm insiders and the outside investors suggesting that firms use debt only when the internal financing is not available (Myers & Majluf, 1984). Besides, the agency cost theory Jensen and Meckling(1976) predicts the capital structure choice based on the existence of agency cost. This theory investigates the relationship between the manager of the firm, and the outside equity and debt holders (Jensen & Meckling, 1976).

Commencing from Modigliani and Miller (1958), the literature on capital structure has been expanded by many theoretical and empirical contributions. For non-financial firms the empirical literature has generally focused on particular variables that have been found to be consistently correlated with leverage such as: age, size, growth, profitability, market-to-book ratio, collateral value and dividend policy Gropp and Heider(2009). On the other hand, the capital structure of banks is still a relatively under-explored area in the banking literature Amidu(2007). Currently, there is no clear understanding on how banks choose their capital structure and what factors influence their corporate financing behavior (Amidu, 2007).

How an organization is financed enlighten to both the managers of the firms and providers of funds. This is because if wrong mix debt and equity of finance is employed the performance and survival of the business enterprise may be seriously affected. This study wants to examine the relationship between the firm internal & external factors and leverage. Financing decision facilitates the survival and growth of a business enterprise, which calls for the need to channel efforts of businesses towards realizing efficient financing decision, which will protect the shareholders interest Mohammed(2014). This implies effective planning and financial management through combination

of an optimum capital structure by managers so as to maximize the shareholders wealth Mohammed (2014). A firm can finance investment decision by debts, equity or both. Financial managers are facing difficulties in precisely determining the optimal capital structure Brealey and Myers (1991). Optimal capital structure means with a minimum weighted average cost of capital and maximize the value of the organization (Mohammed, 2014).

Furthermore, a determinant of capital structure has been investigated for many years, but researchers have found different results with different contexts. Accordingly, there is no specific result, which can be generalized on the extent of the relationship between leverage and firm internal & external factors, thus there is a constant for new research in different context for achieving a more complete understanding for the dynamics relationship between the firm's capital structure & its affecting factors.

1.2 Statement of the problem

Capital structure refers to several alternatives that could be adopted by a firm to get the necessary funds for its investing activities in a way that is consistent with its priorities Kibrom (2010). Most of the effort of the financial decision making process is centered on the determination of the optimal capital structure; where the firms' value is maximized and cost of capital is minimized Weldemikael(2012) .The modern theory of capital structure was first established by Modigliani and Miller as of 1958. Following the seminal work of Modigliani and Miller (1958), a vast theoretical literature developed, which led to the formulation of alternative theories, such as the static trade off theory, pecking order theory and agency cost theory. Static trade off-theory assumes that a firm's optimal debt ratio is determined by trade-off between the bankruptcy cost and tax advantage of borrowing ,holding the firm's assets and investment plans constant. Whereas, pecking order theory is another dimension of the capital structure driven by firm's desire to finance new investments, first internally, then with low –risk debt, and finally if all fails with equity. Therefore, the firms prefer internal financing to external financing. Agency theory focuses on the cost which are created due to conflicts of interest between shareholders, managers and debt holders. According to this theory capital structures are determined by agency costs, which includes the costs for both debt and

equity issue. This shows that theories of capital structure have been resulting in different conclusion.

Similarly, the findings of prior empirical studies have provided varying evidence related to the determinants of capital structure. For instance, Caglayan and Sak (2010) have studied the determinants of capital structure of banks in Turkey and provided evidence that pecking order theory is pertinent theory to Turkish banks. Beside, Buferna et al. (2005) provide evidence that trade off theory and agency theory are pertinent theories of the capital structure to developing country. On the other hand, Amidu (2007) on Ghanaian banks supports the static trade-off and pecking order argument and likewise, the study made by Naveed et al. (2010) found that there is a positive and statistically significant relationship between size and risk with leverage. There is also a negative and statistically significant relationship between profitability, liquidity and age with leverage. But, growth and tangibility has insignificant relationship with leverage. In contrast, Lim (2012) revealed a negative and significant relationship between risk and leverage and Mohamed and Mahmoud (2013) found a positive significance relationship between tangibility, profitability and age with leverage. However, there is also a negative relationship between growth and liquidity with leverage. Tornyeva (2013) revealed a positive significant relationship between growth and leverage; however, the relationship between tangibility and risk with leverage is statistically insignificant. But, Albulena et al. (2014) and Naser and Krassimir (2011) found a significant relationship between tangibility and liquidity with leverage. The finding's made by Muhammad et al. (2013), Sidra et al. (2013), Sbeiti (2009), Kingsley (2013), Najjar and Petrov (2011) and Charles et al. (2013) are similar with the above mentioned authors. Therefore from the above findings, the researcher understands that the previous studies were conducted based on firms' specific factors (internal factor) and also there are some inconsistencies in their findings and conclusions for some variables.

In the context of Ethiopia, as per the researcher's knowledge based on the available literature, there were few studies that have been conducted in relation with capital structure determinants as compared to other countries. Among those studies, Ashenafi(2005) a case study in Addis Ababa small and medium enterprises, Amanuel (2011) evidence from manufacturing share companies in Addis Ababa city, Mintesinot (2010) evidence from selected manufacturing private limited companies of Tigray region, Bayeh (2011) , Solomon (2012),Mohammed (2014) and Daniel(2015)

separately in case of insurance companies of Ethiopia, Kibrom (2010) and Woldemikael (2012) separately evidence from Ethiopian banking sector were reviewed by the researcher. To the best of researcher's knowledge, there was no a single empirical investigation in Ethiopian context that examined both internal (firm specific) and external (macroeconomic) determinants of capital structure decision pertaining to Ethiopian banking sector particularly. Besides, most capital structure studies to date are based on data from developed countries' firms and very few studies provide evidence from developing countries. The capital structure of banks has not also been investigated; there is no clear understanding on how banks construct their capital structure and what internal and external factors influence their corporate financing decision. Thus, the lack of agreement about what would qualify as optimal capital structure and lack of literature in the case of Ethiopia has motivated this study. Therefore, given the unique financial features of banks and the environment in which they operate, there is a strong ground to conduct separate study on capital structure determinants in banks.

This study, therefore, examines determinants of capital structure of commercial banks in Ethiopia by using its internal and external determining factors. Ethiopia differs from other developing countries previously studied in such a way it has no secondary capital market which makes things easier for firms to raise funds and choose the best mix of debt and equity sources. In general, the researcher is fascinated to conduct this study due to lack of comprehensive study on the various determining factors of capital structure of commercial banks in the country and all available previous studies conducted in determinants of commercial banks unincorporated external factors in their research work, this study is filling the research gap by incorporating both internal and external variables such as internal variables(growth, tangibility, size, profitability and liquidity) and external variables (inflation) determining the factors that affect commercial banks capital structure.

Hence, the aim of this study is to empirically examine the determinants of capital structure decision of commercial banks in Ethiopia during the period 2007-2016. This will equip financial managers with applied knowledge of determining their capital structure and fills this gap by providing full information about the relationship between leverage and firm internal and external determinants of capital structure decision.

1.3 Objectives of the study

1.3.1 General Objective of the study

The general objective of this study is to analyze the internal and external factors determining capital structure decisions of Commercial Banks in Ethiopia.

1.3.2 Specific Objectives of the study

Based on the above main objective of this study and the problem statement, the researcher addressed the following specific research objectives:

1. To measure the effect of change in profitability on the leverage of commercial banks in Ethiopia
2. To determine the consequence of change in the tangibility of assets held by commercial banks in Ethiopia on their leverage
3. To find out the extent to which variations in bank size explain the variations in leverage of commercial banking business in Ethiopia
4. To determine the effect of a change in growth of commercial banks on their leverage
5. To investigate how liquidity influence the leverage of commercial banks in Ethiopia
6. To investigate the influence of inflation on the financial leverage of commercial banks in Ethiopia
7. To determine if capital structure decisions that are made in the commercial banks of Ethiopia provide empirical support for existing theories

1.4 Research Questions and Hypotheses of the Study

Based on the research objective, the following research question and hypotheses were developed

Research question (RQ)

RQ1. What is the relationship between firms' capital structure determinants and leverage?

Hypotheses (HP)

To achieve the objective of this study, in addition to the research question presented above six hypotheses concerning the determinants of capital structure choice on the Ethiopian banking industry were tested.

I. PROFITABILITY

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

On the other hand, Pecking order theory assumes that larger earnings lead to the increase of the main source of capital firms choose to cover their financial deficit: retained earnings. Therefore, the Static trade-off theory expects a positive relationship between profitability and leverage, whereas the pecking order theory expects exactly the opposite.

Hypothesis 1: There is a negative relationship between profitability and leverage ratio.

II. TANGIBILITY

A firm having a large amount of fixed assets can easily raise debt at cheaper rates because of the collateral value of those fixed assets (tangibility). Firms with a higher ratio of tangible assets have an incentive to borrow more because loans are available to them at a relatively cheaper rate. Therefore, a positive relationship between tangibility of assets and firm's leverage is expected.

Titman and Wessels (1988) and Harris and Raviv (1991) argue that tangibility might be the major factor in determining the firm's debt levels. If debt is secured against assets, borrower is restricted to using loaned funds for a specific project, and creditors have an improved guarantee of repayment. Thus, firms with high level of fixed assets would have higher level of debt.

Hypothesis 2: There is a positive relationship between tangibility and leverage ratio.

III. SIZE

Size is one of the most widely accepted determinants in research on capital structure. Relationship between size and leverage is mixed. For the Static trade-off approach, the larger the firms are more diversified, have low transaction costs for issuing new equity , and probability of bankruptcy for larger firm is less than smaller firm. Therefore, size positively relates to leverage (Titman and Wessels, 1988).

With respect to the Pecking order theory, Rajan and Zingales (1995) argued that this relationship could be negative. There is less asymmetrical information about the larger firms, reducing the chances of undervaluation of the new equity issue, encouraging large firms to use equity financing. This means that there is a negative relationship between size and leverage of the firm.

Hypothesis 3: There is a positive relationship between the firm's size and its leverage ratio.

IV. GROWTH

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

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

Hypothesis 4: There is a positive relationship between growth and leverage ratio.

V. Liquidity

There are two different opinions on the association between liquidity and capital structure: First view implies a positive significant relation that is consistent with trade off theory. Companies with more liquidity (more current assets) tend to use more external borrowing, because of their ability in

paying off their liabilities. Second view points to a negative significant relation that is consistent with the pecking order theory, arguing that companies with more liquidity will decrease external financing, relying on their internal funds. Thus, liquidity ratios may have a mixed effect on the capital structure decisions.

Most of the previous studies confirm the negative relationship between leverage and liquidity (Ahmed et al., 2010; Najjar and Petrov, 2011). Hence, liquidity is expected to have negative impact on leverage ratio.

Hypothesis 5: There is a negative relationship between leverage ratios and liquidity.

VI. Inflation

When inflation is high, the real value of tax deductions on interest payments is high. Therefore, firms tend to have high leverage so that they can trade-off the costs with rising benefits. According to Frank and Goyal (2009), inflation was considered as the least reliable factor affecting capital structure choice and was also the only one macroeconomic factor included in their model. Booth et al. (2001) also found almost no significant relation of inflation with leverage in case of book leverage but on changing the dependent variable to market leverage, a positive relation was found.

Hypothesis 6: There is positive relationship between inflation and leverage

1.5 Scope and limitation of the study

The scope of this study was limited to the relationship between leverage and determinants of capital structure decision of commercial banks in Ethiopian over the period 2007 to 2016. To this end, this study was limited to firm specific determinant of capital structure (profitability, tangibility, growth, size, and liquidity), external factors (Inflation) and theories of capital structure that can explain the capital structure of Ethiopian banking industry. The major limitations that hamper the study were resource constraint and unavailability of active secondary market which forced the researcher to measure the dependent variable i.e. measures of leverage as well as the proxies of the independent variables in terms of book values rather than market values.

1.6 Significance of the Study

The general objective of this study is to analyze the internal and external factors determining capital structure decisions of Commercial Banks in Ethiopia and to understand about the theories of capital structure that can explain the capital structure of industry. Therefore, this study is expected to provide empirical evidence on determinants of capital structure of commercial banks in Ethiopia.

Furthermore, many parties would benefit from the result of the study like, different stakeholders, the management of Ethiopian banks, investors, creditors, government bodies and policy makers. Finally, it serves as a step stone for further study and detail investigation for other researchers in this area.

1.7 Organization of the thesis

This study is organized into five chapters. Chapter one presents research introduction, statement of the problem, objective of the study, research question and hypothesis, scope and limitation, and significance of the study. Following on this, chapter two of the study presents review of theoretical and empirical literatures on determinants of capital structure. Chapter three presents the research methodology. Then, chapter four presents results and analysis of the study and finally, chapter five presents conclusions and possible recommendations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

A literature review is the backbone of research in the selection of the appropriate research methodology connected to research topic. It is essential for researchers, as a reader, and for us, as authors, to have a concrete frame of reference in mind before continuing the search journey.

Most of all, a solid framework represents the coherence of the theories chosen. This chapter discusses Modigliani-Miller theorem, theory of capital structure (trade-off theory, pecking order theory & agency cost theory), definition of capital structure, determinants of capital structure, review of empirical studies.

2.1 General Overview

Capital structure refers to several alternatives that could be adopted by a firm to get the necessary funds for its investing activities in a way that is consistent with its priorities Kibrom(2010). Two major sources of financing that are available to firms are debt and equity Weldemikael (2012). The mixture of debt and equity is called capital structure Weldemikael(2012). Most of the effort of the financial decision making process is centered on the determination of the optimal capital structure; where the firms' value is maximized and cost of capital is minimized (Weldemikael, 2012).

2.2 Definition of Capital Structure

There are many definitions given to capital structure of companies. Brealey and Myers (1991) defined capital structure as comprising of debt, equity or hybrid securities issued by the firm. VanHorn (1989) defined capital structure as the proportion of debt to the total capital of the firms. Pandey (2005) defined capital structure as a choice of firms between internal and external financial instruments.

From the definitions given by many previous researchers, capital structure of a firm describes the way in which a firm raise capital needed to establish and expand its business activities. It is a mixture of various types of equity and debt capital a firm maintains, resulting from the firm's

financing decisions. The amount of debt that a firm uses to finance its assets is called leverage. A firm with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unlevered. For example, a firm that sells Birr 20 million in equity and Birr 80 million in debts is said to be 20 percent equity-financed and 80 percent debt-financed. The firm's ratio of debt to total capital is 80 percent and is referred to as the firm's leverage.

The term capital structure is used to represent the proportionate relationship between debt and equity VanHorn (1989). Debt represents the creditors' claim i.e. liabilities or borrowings (VanHorn (1989). Equity includes paid-up share capital, share premium, and reserve and surplus or retained earnings (Van Horn, 1989).

Managers, in the extent to pursue wealth maximization objective of a firm, should examine the set of theories and at least major factors affecting the decision that help them choose the optimal capital structure. Normally firms have option of choosing debt financing, equity financing, or combination of the two, with the other option of internal financing mainly from the retained earnings. Such dealings of financing decisions are, in fact, termed as Capital Structure Decisions (Kibrom, 2010).

2.3 Theoretical framework and previous researches

2.3.1 Capital structure theories

The Modigliani-Miller (1958) irrelevance theorem is the keystone for the later theories contributing to today's corporate finance in general and for studies on capital structure determinants specifically. This theorem, referred to as irrelevance proposition, suggests that a firm's financing decision has no effect on its value. In other words, value of the firm depends on the income generated by its assets, not by how the assets are financed or how the income is divided. It is the conclusion held in "a perfect world", where four main assumptions are required: no corporate taxes, no bankruptcy costs, no information asymmetry and no agency costs. The theorem is considered flawed when being applied to reality – "an imperfect world".

Subsequent theories have been developed, taking into account the market imperfections by relaxing those restrictive assumptions. These theories include the extended M&M theorem (1963) which considers corporate taxes in light of benefits brought by tax shields, static trade-off theory which

weigh such tax shield benefits against the bankruptcy costs, agency theory which relaxes the assumption of no agency costs and pecking order theory.

Bank is considered as a very special firm - the only financial institution licensed as a receiver of deposits. Being a firm, all capital structure related theories applicable to firms should also be applicable to a bank. Being a special firm, there should be some special application of these theories to a bank.

2.3.1.1. M&M irrelevance theorem

(i) M&M theorem – no taxes case (1958)

The theorem has two propositions relevant to capital structure topic. As concluded from Proposition I, the value of the leveraged firm is equal to the value of the unleveraged firm. It implies that a firm's capital structure is irrelevant; and its weighted average cost of capital ("WACC") is the same no matter what mixture of debt and equity used to finance the firm is. Proposition II refers that the cost of equity rises as the firm increases its use of debt financing, depicting the risk of equity depends on two things: the riskiness of the firm's operations (business risk) and the degree of financial leverage (financial risk).

(ii) M&M theorem - with corporate taxes (1963)

In 1963, M&M theorem was further extended when relaxing the assumption of no corporate taxes. With respect to taxes, interest payments on debts are deductible expenses and thus reduce taxes payable, improving the firm's net income position. Following that, the value of the leveraged firm is equal to the value of the unleveraged firm plus the present value of the interest tax shield. It implies that debt financing is highly advantageous and in the extreme, a firm's optimal capital structure is 100% debt since its WACC decreases with the increase of debt financing. This may refer the important role of corporate taxes in capital structure decisions of all profit-generating entities, among which banks are not exception.

According to Buferna et al (2005), in the literature of capital structure, three important and popular but conflicting capital structure relevancy theories have been developed, which includes the Static trade-off theory, Pecking order theory and Agency costs theory. These theories are explained below:

2.3.1.2 Agency theory (Jensen and Meckling, 1976)

The theory captures the effect of agency costs, i.e. costs due to conflicts of interest among agents. There have been a number of researches on the models in which capital structure is driven by agency costs. Jensen and Meckling (1976) study on earlier work of Fama and Miller (1972) was the pioneer research on this topic. They proposed that these costs arise due to conflict of interest between managers and shareholders, who both desire for self-benefit maximization.

Managers have a very little claim on the profit of the company yet they are fully responsible for all the profit engineering activities. Hence they have a lesser incentive to utilize the resources fully for generating profit but transfer these resources to their own benefits. As pointed out by Jensen (1986), debts can be used as a correction tool to mitigate the agency costs of managerial discretion. The reason is that when requiring the firm to pay out cash on a regular basis, debts can help decrease the amount of “free” cash accessible by managers to spend on their personal benefits.

Additional conflicts of interest are between shareholder and debt holder, whose costs are called agency costs of debt. Myer (1977) argues that a firm could incur deadweight costs when a company has a profitable investment opportunity which must be financed by equity, provided an outstanding default-risky debt. In this case, if the residual benefits to shareholders are lower than the project's costs after being transferred to debt holders, managers will not adopt the project even if it is profitable. It is so-called the under investment problem, arising when managers, acting in the interest of shareholders, may take actions that appropriate wealth from debt holders to shareholders. This implies that leverage has a negative relation with the growth opportunities of the firms.

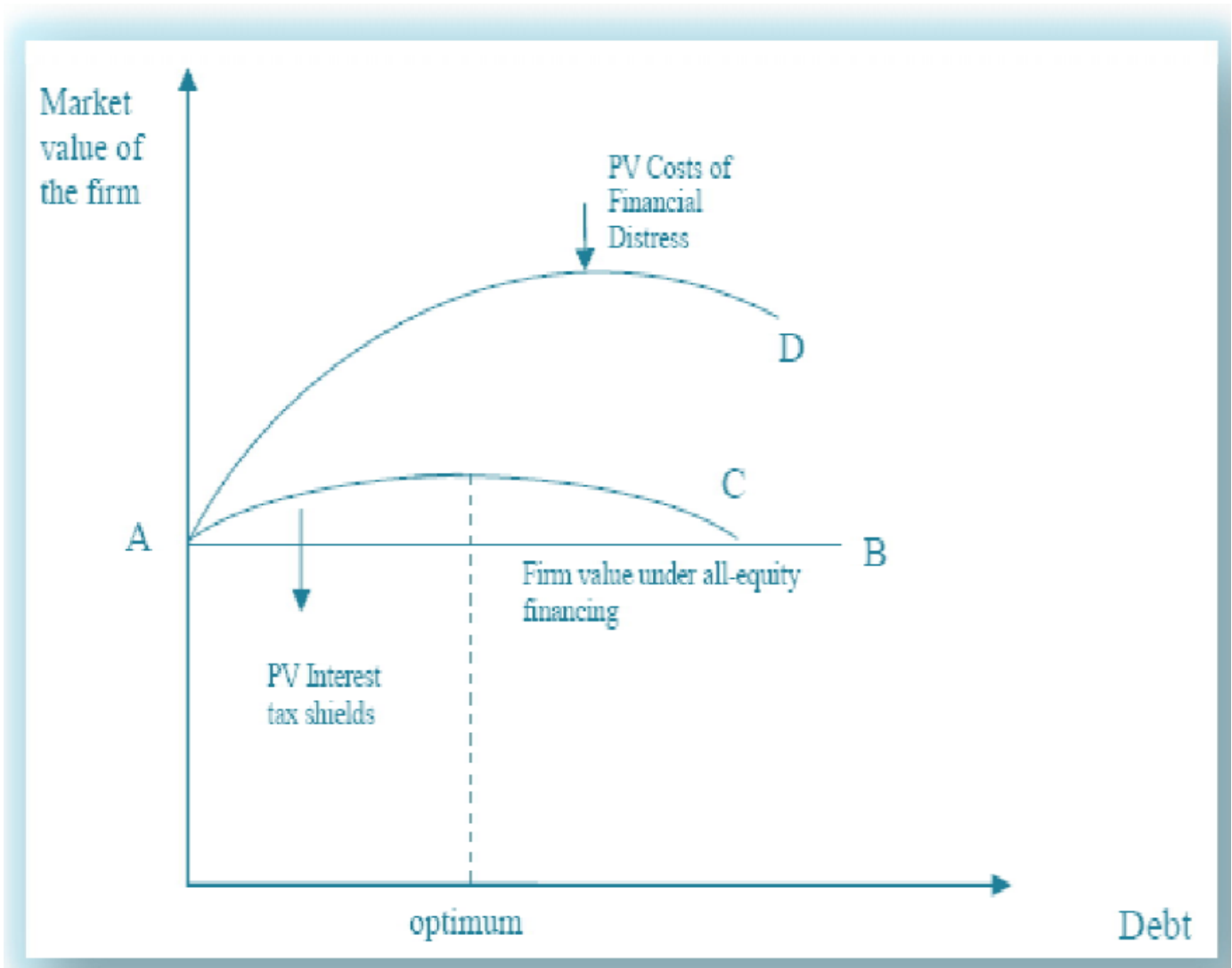
Grossman and Hart (1982) introduces the term “bankruptcy cost to the managers”, including loss of job, loss of position and fear of takeover. It motivates managers to work harder towards efficient allocation of resources and investing in higher profitable activities, reducing the conflict with the equity holders. This alleviates the divergences between managers and equity holders, one more time asserting the benefit of debt financing. From that, they concluded that leverage is positively related with the value of the firm.

The agency theory is also well applicable to bank capital structure, for which we will exploit later in our further analysis.

2.3.1.3 Static trade-off theory (Myers, 1984)

The Static trade-off theory came as a reaction on the Miller and Modigliani theory, presenting the benefits of debt financing via debt related tax shields. Doubts were raised over the fact that there was no offsetting cost to debt. Therefore, a discussion followed saying that the optimal leverage should be found where a trade-off between tax shield benefits of debt and costs of financial distress was found (Shyam-Sunder and Myers, 1999). Debt enables the possibility to deduct interest charges raising incentive for higher leverage in order to maximize the tax shield. By doing this the firm value increases with the value of the tax shield (Graham, 2000). Damodaran (2001) stretches the increased financial discipline for managers as a consequence of higher debt levels. However there have been raised concerns on increasing risks of bankruptcy with increasing debt levels and likelihood of raising agency costs occurring between owners and managers. An underlying reason for this is a conflict of interests generated by debt (Myers, 1984). Therefore, according to the trade-off theory, an optimal debt level which maximizes the value of the firm does exist, when attaining a trade off as balancing the benefits of debt against the cost of financial distress.

Graph 2.1: The Static Trade-off Theory of Capital Structure



Source: Myers (1984, p 57)

As indicated in Graph 2.1, the straight line AB shows the value of a firm under all-equity financing. When a firm undertakes debt it has to pay interest. Interest payments are generally tax deductible, thus when a firm takes debt; it is able to increase its value. This is called the interest tax shield of debt. Debt almost literally shields the firm from paying out more in taxes. Therefore, as curve AC shows, initially as the firm undertakes more debt, the value of the firm increases. However, after a

certain level (the optimum level) of debt, the value of the firm starts falling as shown by the falling portion of curve AC. After a certain level of debt, the costs of debt start outweighing the benefits of debt. This is illustrated by the curve AD, which shows that the costs of financial distress rise significantly at higher levels of debt. At higher levels of debt, firms have to pay more interest and if they are unable to repay the debt and interest, then they are likely to go bankrupt. As costs of financial distress rise, firms would prefer to stick to a 'reasonable' level of debt. This is illustrated in the diagram above where the optimum market value of the firm is achieved where the present value of the interest tax shield is at a maximum. The trade-off model assumes that companies have an optimal capital structure and they aim to attain this through a target debt level. This is the reason why the Trade-off Theory is often referred to as the 'Static Trade-off Theory' in the literature (Myers, 1984).

Debt has the disadvantage that it increases the probability of firms becoming financially distressed. The costs of debt include potential bankruptcy costs. Repayment of interest on debt is an obligation that a firm has to fulfill whatever its financial state. Hence, if a firm is unable to undertake its debt obligation it will obviously face bankruptcy (Kibrom, 2010).

Another cost of debt is the agency conflicts that can arise between stockholders/shareholders and bondholders/debt holders (Fama and French, 2002). This can be explained by the fact that if an investment pays off equity holders are the ones to benefit as they are entitled to the residual profits after interest on debt has been repaid. Risky investments are the ones that normally have higher returns and therefore equity holders will prefer these types of investment. Debt holders on the other hand, are only concerned with their interest payments. They would prefer firms to choose less profitable but safe investments. This explains the conflict that may arise between stockholders and bondholders.

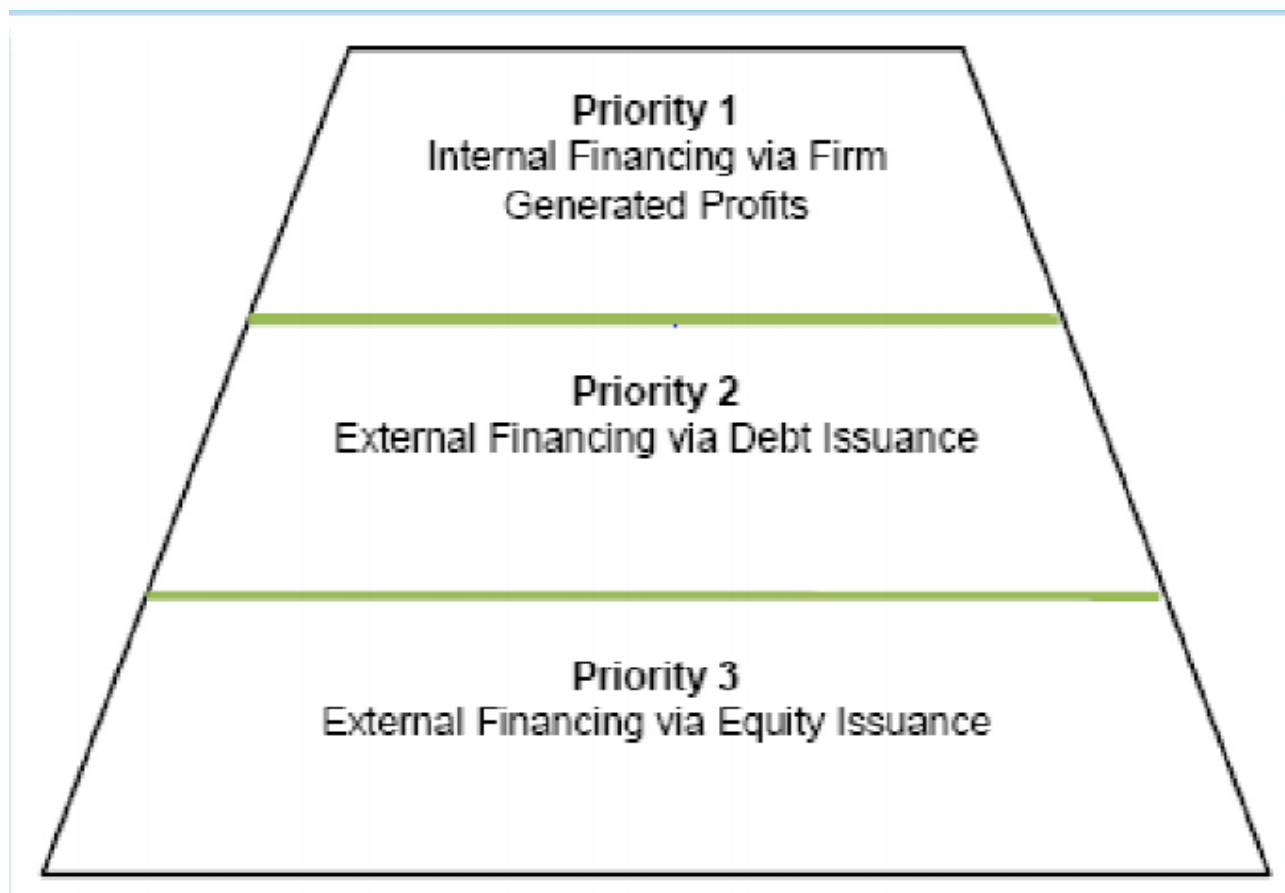
The benefits of debt include the tax deductibility of interest payments (Benito (2003). As argued by Benito firms use debt as a means of limiting the interest of managers which may diverge from the interests of shareholders. In fact, debt reduces free cash flow problems as excess cash is used to repay debt, rather than managers using it to consume bonuses (Fama and French, 2002; Harris and Raviv, 1991).

According to this theory, higher profitability decreases the expected costs of distress and let firms increase their tax benefits by raising leverage; therefore, firms should prefer debt financing because of the tax benefit. As per this theory firms can borrow up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased probability of financial distress (Ross, 2002, p586).

2.3.1.4 Pecking Order Theory (Myers and Majluf, 1984)

Unlike the trade-off theory, the pecking order theory does not assume an optimal level of capital structure. As previously indicated Myers and Majluf (1984) favor the pecking order theory, which incorporates the assumption of information asymmetries and transaction costs. According to the Pecking Order theory, firms have a strong preference for internal finance (Myers, 1984) as it is believed to have a cost advantage over new debt and equity. If external finance is required, firms first issue debt and when all other “safe” options are exhausted; they issue equity as a last option. The literature regarding the Pecking Order theory has been dormant since its inception in the early 1980’s when it was first proposed by Myers (1984) and Myers and Majluf (1984). This pecking order theory therefore suggests that firms should follow a financing hierarchy in order to minimize information asymmetry between the parties. It states that companies prioritize their source of financing, from internal financing to equity financing, according to the principle of the least resistance, preferring to raise equity as a financing means of last resort. So, the pecking order theory claims that internal funds are used first and only when all internal finances have been depleted, firms will optimum for debt. When it is not sensible to issue any more debt, they will eventually turn to equity as a last financing resource (Henrik and Sandra ,2004, p5)

Figure 2.2: Pecking Order of Financial Hierarchy



Source: Henrik and Sandra (2004, p 5)

The Pecking Order Theory is diagrammatically illustrated above. The hierarchy shown in Figure 2.2 above can be explained by number of factors. These factors include the costs associated with each form of finance which are related to the degree of information asymmetry, the “safeness” of each form of finance or the signal that the issuance of some form of finance gives to the market. Internal finance is believed to be the cheapest source of finance followed by debt and equity. The availability of internal funds allows firms to undertake investment without having to resort to external finance which is relatively more expensive due a number of factors.

Additionally, Myers (1984), explains this hierarchy by the fact that firms follow the rule of “issue debt when investors undervalue the firm and issue equity or some other security when they overvalue it.” Investors are aware of this and do not buy securities unless they are convinced that the firm has exhausted its “debt capacity”. Hence, investors typically ensure that firms follow a pecking order.

Also the issuance of debt or equity can cause agency problems to arise. The issuance of debt can cause conflicts to arise between managers and debt holders while the issuance of equity can cause conflicts to arise between debt holders and equity holders. Furthermore, the issuance of external finance namely debt, involves repayment of capital and interest which the firm has to pay whatever its financial state. This increases the risk of financial distress. All these factors explain why a firm would prefer internal finance over external finance (Myers, 1984).

Summarizing, theory predicts that more profitable firms that generate high cash flows are expected to use less debt capital than those who generate lower cash flows. The pecking order theory argues that businesses adhere to a hierarchy of financing sources and prefer internal financing when available. However, when external financing is required, firms prefer debt over equity. Equity entails the issuance of additional shares of a company, which generally brings a higher level of external ownership in to the company. Therefore; the form of debt that a firm chooses can act as a signal for its need of external finance. Thus firms that are profitable and therefore generate high cash flows are expected to use less debt compared to those who do not generate high cash flows. This theory therefore suggests that firms prefer debt to equity (Muritala, 2012).

All of the mentioned mechanisms suggest that the pecking order theory claims a negative relationship between capital structure and firm performance, since more profitable firms opt to use internal financing over debt.

2.4 Theoretical Determinants of Bank Capital Structure

Following from the above theoretical standpoints, a number of empirical studies have identified firm-level characteristics that affect the capital structure of firms. As a result of these studies, some broad categories of capital structure determinants have emerged. Titman and Wessels (1988), and Harris and Raviv (1991), however, point out that the choice of suitable explanatory variables is potentially debatable. In this study, to identify the determinant factors and which of the capital

structure theories is applicable in the Ethiopian commercial banking context, the researcher have concentrated on six key variables as identified in studies by Titman and Wessels (1988) in USA, Ashenafi (2005) in Ethiopia, Buferna et al (2005) in Libya, Rajan and Zingales (1995) in G7 countries and Mohammed (2014) in Ethiopia. The selected variables are Profitability, Collateral value (Tangibility), Size, Growth, liquidity and inflation. However, there is significant disagreement among the capital structure theories. Therefore, the discussion involves the viewpoints of the capital structure theories about the effect of these attributes on leverage ratio from the view of different prior empirical researches.

I. PROFITABILITY

One of the main theoretical controversies is the relationship between leverage and profitability of a firm. Profitability is a measure of earning power of a firm. The earning power of a firm is the basic concern of its shareholders. The effect of profitability on leverage was well explained by the “pecking order” theory that was suggested by Myers (1984). According to this theory, firm has an ordered preference for financing whereby they prefer retained earnings as their main source of funds for investment which is followed by debt. The last resort sought by a firm would be external equity financing. The reason for this ranking was that internal funds were regarded as ‘cheap’ and not subject to any outside interference. External debt was ranked next as it was seen cheaper and having fewer restrictions than issuing equity and the issuance of external equity is seen as the most costly way of financing a firm Myers (1984). Therefore, when firms which was profitable is seen to have more retained earnings and choose to have lower leverage, hence a negative relationship between profitability and leverage is expected.

However, according to the static trade-off theory, high profitability level gives high level of borrowing capacity. This situation promotes the use tax-shield. Firms normally have to pay taxes on their profits. To avoid this, they prefer to take more debt in their capital structure as interest payments on debt are generally tax deductible. Agency costs theories also predict that profitable firms would take more debt in their capital structure to control the activities of managers. Hence, the more profitable a firm is, the more debt it will have in its capital structure. Thus, the trade-off theory hypothesizes a positive relationship between profitability and debt level (Frank and Goyal, 2003).

II. COLLATERAL VALUE OF ASSETS

Collateral value of assets, also known as Asset Composition or Tangibility; are those assets that creditors can accept as security for issuing the debt. In an uncertain world, with asymmetric information, the asset structure of a firm has a direct impact on its capital structure since a firm's tangible assets are the most widely accepted sources for the bank borrowing and secured debts. If banks have imperfect information regarding the behavior of the firm, firms with few tangible assets find it difficult to raise funds via debt financing. The type of assets the firm holds plays a significant role in determining that firm's capital structure. The reason can be that when a large fraction of the firm's assets is tangible, assets can serve as collateral, which diminishes the risk of the lender suffering agency costs of debt.

Harris and Raviv (1991) predicts that firm with higher liquidation value will have more debt. On the other hand, based on the previous research by Titman and Wessels (1988) argue that the ratio of fixed to total assets (tangibility) should be an important factor for leverage. The tangibility of assets represents the effect of the collateral value of assets of the firm's gearing level. As such, firms with a higher proportion of tangible assets are more likely to be in a mature industry thus less risky, which affords higher financial leverage.

Findings by Rajan and Zingales (1995) are consistent with the Static trade-off theory saying that tangible assets are appropriate for the purpose of raising debt since it act as good collateral. It also seems to reduce the cost of financial distress. Concluding this, firms with large ratios of tangible assets would be expected to raise more debt. On the other hand, the pecking order theory stretch that firms with few tangible assets faces larger asymmetric information problems and will therefore tend to raise more debt over time and become more levered (Frank and Goyal, 2003).

III. SIZE OF THE FIRM

Size is one of the most widely accepted determinants in research of capital structure. Relationship between size and leverage is mixed. Researchers who focus on bankruptcy cost (static trade-off theory), they justify the positive relationship between size and financial leverage like this: as large firms are more diversified, have low transaction costs for issuing new equity, and probability of bankruptcy for large firms is less than smaller firms therefore size positively relate to leverage.

Theories based on asymmetric information, state that large firms have to inform more to their investors therefore they prefer equity over debt. Therefore size and leverage holds negative relationship between them. Pecking order theory also agrees on negative relationship.

Furthermore, in the research made by Rajan and Zingales (1995), indicate that including size in their cross sectional analysis, they found that the effect of size on equilibrium leverage is more ambiguous. Thus, larger firms tend to be more diversified and because of that, size may then be inversely related to the probability of bankruptcy.

IV. GROWTH

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

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

Generally, according to the trade-off theory, firms experiencing large growth would raise less debt since the value of their growth opportunities in case of bankruptcy is close to zero. On the other hand, the pecking order theory stretches that small firms faces larger information asymmetries and therefore raise more debt. In order to minimize such asymmetries, firms with high growth will seek to issue debt. Since high growth firms traditionally have higher market-to-book ratios this measure will be used as a proxy (Frank and Goyal, 2003).

V. Liquidity

There are two different opinions on the association between liquidity and capital structure. The first view, as explained in Trade off theory, argues that firms with more liquidity (more current assets) tend to use more external borrowing, because of their ability in paying off their liabilities. The

higher liquidity ratio would relatively have higher debt ratio due to greater ability of a firm to satisfy short-term contractual obligations on time.

In contrary to this, the pecking order theory believes firms with financial slack (i.e. liquid assets such as cash and marketable securities) will prefer internal sources than debt or equity to finance future investments (Myers, 1984). Hence they argued negative significant relation between liquidity and capital structure. Most of the previous studies, confirm the negative relation: Ahmed et al. (2011), Harris and Raviv (1991), Najjar and Petrov (2011) and Sharif et al. (2012) founds firms with high liquidity ratios or more liquid assets prefers to use these assets to finance their investments and discourage to raise external funds (either equity or debt). But Bayeh (2011) found insignificant effect of liquidity on leverage usage of insurance companies and according to Weldemikael(2012) the liquidity on leverage usage of banking industry in Ethiopia the result for liquidity clearly supports the pecking order and agency theories.

VI. Inflation

When inflation is high, the real value of tax deductions on interest payments is high .Therefore, firms tend to have high leverage so that they can trade-off the costs with rising benefits .According to Frank and Goyal (2009), inflation was considered as the least reliable factor affecting capital structure choice, and was also the only one macroeconomic factor included in their model. Booth et al. (2001) also found almost no significant relation of inflation with leverage in case of book leverage but on changing the dependent variable to market leverage, a positive relation was found.

2.5 Empirical Evidences of Determinants of Capital Structure

2.5.1. In Developed Countries

After the influential introductory paper on capital structure by Modigliani and Miller (1958), there were quite a number of researches directed towards finding the determinants of capital structure choice. Research on the determinants of capital structure initially was aimed at mainly in the United States' firms. One of the classical researches was carried out by Titman and Wessels (1988); where they studied the theoretical determinants of capital structure by examining them empirically. The theoretical attributes namely; asset structure, non-debt tax shields, growth, uniqueness, industry

classification, firm size, earnings volatility and profitability were tested to see how they affect the firm's debt-equity choice. The results indicated consistencies with the theories of capital structure for the factors affecting capital structure choices of firms. One of the few interesting conclusion drawn from the studies in US include the negative relationship of debt to "uniqueness" of a firm's line of business.

The short-term debt ratio was negatively related to firm size. Besides that, a strong negative relationship was noted between debt ratios and past profitability. The study of Titman and Wessels (1988), however, did not provide strong empirical support on variables like non-debt tax shields, volatility, collateral value and future growth.

As stated previously, there were many papers written by research scholars on capital structure choices that are mostly based on empirical data of firms in the United States only.

To broaden the understanding of capital structure models, Rajan and Zingales (1995) have attempted to find out whether the capital structure choices in other countries is based on the similar factors of those influencing capital structure of U.S firms. For this purpose, the accounting data and monthly stock prices for five years, from 1987 till 1991 were collected from the international financial database all the G7 countries; namely the U.S, Japan, Germany, France, the U.K, Italy and Canada. Banks and insurance companies were eliminated from the sample collected as their leverages are affected by government regulations.

Four factors; tangibility of assets, growth, firm size and profitability were tested to see its influences on leverage. A cross-sectional basic regression model of leverage was developed with four of the factors mentioned above as independent variables. Rajan and Zingales (1995) noted that across the countries, the asset tangibility was positively correlated with leverage for all the countries as theory supported the notion that firms having more fixed assets in their assets mix will use that as collateral to get more loans or debt. The market to book ratio seemed to be negatively correlated with leverage except for Italy. Having high market value of the stocks would enable firms to issue more stocks and not seeking debt. Size of firm was positively correlated while profitability was negatively correlated with leverage in all countries except Germany. As a conclusion, this paper found that at an aggregate level, firm leverage was fairly similar across the G-7 countries. This

study also pointed out some avenue for future research especially on the unbiased sample selection, the actual determinants of capital structure and deeper consideration of institutional influences.

After Rajan and Zingales (1995), there were several research papers made on capital structure by testing the applicability on other countries apart from United States alone. One of the prominent researches was carried out by Gropp and Heider (2007) approached the issue of Bank Capital Structure using banks from developed countries (US and 15 EU members, for 14 years). They specifically tested the significance of size, profitability, market-to-book ratio, asset tangibility, and dividend paying status in determining bank leverage. Their results provided strong support for the relevance of standard determinants of capital structure on bank capital (Kibrom, 2010).

2.5.2. In Developing Countries

There were many empirical researches undertaken by scholars on capital structure choices in the developed nations. But, there were not many research directed towards developing countries that show the applicability of the theories of capital structure generated from the developed nations. One of the prominent studies was done by Booth et al. (2001). They have undertaken an interesting study to see whether the capital structure theory could also be applicable in the developing countries irrespective of different institutional structures. The readily available balance sheets and income statements were collected by the researchers from the International Finance Corporations (IFC) for the largest companies in 10 developing countries, namely; India, Ghana, Pakistan, Thailand, Malaysia, Turkey, Zimbabwe, Mexico, Brazil, Jordan, Libya and Korea. The variables were used such as tax, business risk, asset tangibility, sales, return on assets and market-to-book ratio.

A basic cross regression model of three different measures of firm's debt ratio against those variables was developed. From their analysis, the authors have concluded that the variables that explained the capital structures in developed nations were also relevant in the developing countries irrespective of differences in institutional factors across these developing nations. The same types of variables, which affect developed nations, were significant in developing nations too. This research supports the argument of asset tangibility in financing decisions which indicates that firm's long-term debt ratio increases while total-debt ratio decreases as more tangible the asset mix becomes. It is interesting to note that the estimated empirical average tax rate does not affect the financing decisions except for becoming as a proxy for profitability. The research also indicated that knowing

the nationality of the firm is at least important as knowing the size of independent variables for both the total and long-term book debt ratios. The authors have outlined their recommendation for further studies or research in this area with an increase in the quality international database (Mohammed, 2014).

One of the studies conducted by Bas et al. (2009). This paper examined the determinants of capital structure decisions of firms in developing countries collecting secondary data for 11,125 firms from World Bank for 25 developing countries. They discussed about capital structure decisions of firms in developing markets covering countries from different regions. They analyzed whether the determinants of capital structure show differences among small, medium and large firms. Bas et al. draw the following major conclusions from the results. Regardless of how the firm defines, in accordance with the capital structure theory, the importance of firm level variables, such as tangibility and profitability is confirmed. According to the results, private, small, medium and large firms follow the pecking order on their debt financing decisions. But listed firms prefer equity financing to long term debt financing. Moreover, internal funds do not have an impact on the debt financing decisions. Another major finding was the size effect. They saw different responses from small and large firms towards debt financing. As firms become larger, they become more diversified and risk of failure is reduced as a result of that they can have higher leverage. According to their results, small and large companies have different debt policies. Due to the information asymmetries, small firms have limited access to finance; therefore, they face higher interest rate costs. Also, they are financially more risky compared to large firms. As a result of that, small companies have restricted access to debt financing which may influence their growth (Kibrom, 2010).

The paper of Huang and Song (2005) employed regression model to document the determinants of capital structure of Chinese listed companies. The data included market and accounting figures of more than 1200 companies for the time period 1994-2003. They find that leverage (long-term debt ratio, total debt ratio, and total liability ratio) decreases with profitability, non-debt tax shield and managerial shareholdings, while it increases with firm size and tangibility. In addition, the tax rate positively affects long-term debt ratio and total debt ratio. Furthermore, they find a negative relationship between leverage and firm growth opportunities.

Buferna et al. (2005) provided further evidence of the capital structure theories pertaining to a developing country and examined the impact of lack of a secondary capital market by analyzing a capital structure question with reference to the Libyan business environment. They developed four explanatory variables that represent profitability, growth, tangibility and size to test which capital structure theories best explained Libyan companies' capital structure. The results of cross-sectional OLS regression showed that both the static trade-off theory and the agency cost theory are pertinent theories to the Libyan companies' capital structure whereas there was little evidence to support the asymmetric information theory. The lack of a secondary market may have an impact on agency costs, as shareholders who are unable to offload their shares might exert pressure on management to act in their best interests.

A study made by Amidu (2007) examined the determinants of capital structure of Ghanaian banks by employing panel regression model. Amidu (2007) has highlighted the importance of distinguishing between long and short forms of debt while he made inferences about capital structure. Amidu (2007) specifically tested the significance of bank size, profitability, corporate tax, growth, asset structure, and risk in determining bank capital structure. The result showed that short-term debt of banks is negatively related to banks profitability, risk, and asset structure and positively related to bank size, growth and corporate tax. On the other hand, the long-term debt of the banks is positively related to banks' asset structure and profitability and inversely related to bank risk, growth, size and corporate tax. Generally, the variables examined were consistent with the static trade-off and pecking order arguments, with the only exception being risk.

Gropp and Heider (2009) approached the issue from a different perspective. Using a sample of banks from developed countries, they specifically tested the significance of size, profitability, market-to-book ratio, asset tangibility, and dividend paying status in determining bank leverage. In the process, they made a stark distinction between bank book and market leverage as well as controlled for asset risk and macroeconomic factors.

They further examined whether asset risk captures the effect of risk adjustments on the minimum capital required or it rather represents factors pertaining to the standard capital structure theories. Overall, their results provided strong support for the relevance of standard determinants of capital structure on bank capital.

Caglayan and Sak (2010) studied the determinants of capital structure of banks in Turkish. The objective of the study was to examine the relationship between the leverage level and a set of explanatory variables (Tangibility, Size, Profitability, and Market to book ratio) by using panel data analysis to establish the determinants of capital structure of bank over the period 1992-2007. The main results of their study reveal that size and market to book have positive and statistically significant impact on the book leverage while the variables of tangibility and profitability have negative and significant impacts on the book leverage. These findings strongly confirm the pecking order theory; except the relationship with tangibility which weakly confirms the agency cost theory

Khrawish and Khraiwesh(2010) examined the determinants of capital structure; evidence from Jordanian industrials companies over the period (2001- 2005). Using panel data, Leverage ratio, Long-term debts/total Debts and five explanatory variables that represent size, tangibility, profitability, long-term debt and short-term debt were calculated. Based on the statistical analysis, they found that there was a significant positive relationship between leverage ratio and size, tangibility, long-term debt and short-term debt and there was a significant negative relationship between leverage ratio and Profitability of the firm.

Ahmed et al., (2010) investigated the impact of firm level characteristics on capital structure of life insurance companies of Pakistan over the period of seven year from 2001 to 2007. For this purpose, leverage was taken as dependent variable while profitability, size, growth, age, risk, tangibility of assets and liquidity were selected as independent variables. The result of OLS regression model indicated that profitability, liquidity, risk and age have negative relationship with leverage which follows pecking order theory while size indicated positive relationship with leverage which shows consistency with trade- off theory. The results also indicated that leverage has statistically insignificant relationship with growth and tangibility of assets.

Similarly, Najjar and Petrov (2011) studied capital Structure of insurance companies in Bahrain. The goal of the study was to investigate the effect of specific firm characteristics on capital structure. They used panel data derived from annual reports and financial statements of five insurance companies listed on the Bahrain Stock Exchange for the period of 2005-2009 and apply multiple linear regression analysis using SPSS to identify those effects. Najjar and Petrov identified a strong relationship between firm characteristics, such as tangibility of assets, profitability, firm size, revenue growth, and liquidity. The results of their study reveal that tangibility and size shows a

positive significant relationship with the debt ratio which confirms the static trade off theory while liquidity shows negative significant relationship with debt ratio which confirms the pecking order theory. But, profitability and revenue growth are not statistically significant and require further research.

2.5.3. In Ethiopia

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

Ashenafi (2005) approached the question of capital structure using data from medium firms in Ethiopia. He took a sample of 50 medium enterprises and made multivariate regression analysis based on financial data of Ethiopian medium enterprises over the period 1991 to 1996 E.C. Variables like non-debt tax shield, economic risk, age of firms, size of firms, tangibility, profitability and growth were regressed against leverage. The outcome of the multivariate regression analysis was consistent with earlier studies for variables like non-debt tax shield, economic risk, size of firms and profitability.

Mintesinot (2010) has undertaken an attention-grabbing study entitled, “The Determinants of Capital Structure: Evidence from Selected Manufacturing Private Limited Companies of Tigray Region, Ethiopia”. Mintesinot used eight explanatory variables: Tangibility, Profitability, Growth, Age, Uniqueness, Size, Earnings Volatility, and Non-Debt Tax Shields, and regressed against dependent variables: Total Debt Ratio, Long-Term Debt Ratio and Short-Term Debt Ratio. He also used secondary data collected from audited financial statements of selected 14 companies for the period of five years (2004-2008). After analyzing the data he came up with this result: Tangibility, Firm Growth, Age of the Firm, Firm Size, Earnings Volatility and Non Debt Tax Shields variables are the significant determinants of capital structure in at least one out of the three models for capital structure employed in the study.

Daniel (2015) examined determinants of capital structure (Profitability, asset tangibility, growth, business risk, size of the firm and liquidity) of insurance companies in Ethiopia. The study

employed panel regression of eight insurance companies covering the period of ten consecutive years, 2005-2014 using STATA. The results show that pecking order, the static trade-off and agency cost theories are important in explaining the capital structure of insurance companies in Ethiopia, even if the Pecking order theory appears to be dominant. Profitability, asset tangibility, growth and liquidity were found to be significant in relation to leverage. The study reveals that there is a negative relationship between profitability, liquidity and asset tangibility with leverage. However, growth opportunity of the firm had a positive relationship with debt ratio. The other hypothesized firm level variables, business risk and size of the firm were insignificant.

Bayeh (2011) on his study for insurance sector of Ethiopia from the period 2004-2010, took seven factors of profitability, liquidity, growth, age, risk, tangibility, and size as independent variables and regressed them against dependent variable as represented by three models namely; total debt ratio, long term debt ratio, and debt to equity ratio. The results of the study showed that firm's growth opportunity, profitability, age, liquidity and risk found to have a significant impact on capital structure measured by long term debt and total debt ratios. The results also suggested that liquidity have a significant positive impact on long term debt and debt to equity ratios while business risk appeared a significant positive impact on debt to equity and debt ratio.

On the hand, growth has a significant negative impact on long term debt and total debt ratios while profitability appear a significant negative impact on long term debt ratio and significant direct impact on total debt ratio. Furthermore, the researcher emphasized a positive and significant impact of age on all the three dependent variable proxies.

Solomon (2012) on his study in case of Ethiopian insurance sector, took firm specific factors of profitability, size, liquidity, growth, non-debt tax shield, dividend payout, age, size, and tangibility as independent variables and regressed them against the dependent variable of leverage. The results of the study implied size, growth, business risk and non-debt tax shield have a significant positive impact on leverage of insurance companies in Ethiopia. On the other hand, the study revealed that profitability, liquidity, tangibility, firm age and dividend payout had no any significant relationship with capital structure of firms in Ethiopian insurance sector.

Mohammed (2014) investigated empirically firm specific factors such as, firm leverage, growth opportunities, size, risk, tangibility and liquidity were impacts on capital structure and performance

of Ethiopian insurance industry from 2004-2013 by using only secondary data. The results show that firm leverage, Size, tangibility and business risk were significant impact on performance of Ethiopian insurance companies. A significant negative relationship is established between leverage and performance. While firm growth and liquidity were not clear and statistical proved relationship obtained from the regression analysis. The results provide strong evidence in support of the pecking order theory of capital structure which asserts that leverage was a significant determinant of firms' performance.

From the above, even if, there are some common factors identified by several researchers that significantly affect capital structure and profitability of insurance industry, the researcher observed that the results of the studies differ significantly due to variation of the socio-economic environment of various countries and the type of data they included in the analysis.

2.6 Conclusion and knowledge gap

This chapter reviewed the literature on determinants of capital structure decision, starting with the famous irrelevance theory of Modigliani and Miller (1958). However, by relaxing the theory of Modigliani and Miller's (1958) assumptions of perfect capital markets, several theoretical frameworks have been developed to explain the firm's capital structure such as static trade-off theory, pecking order theory, and agency theory.

Static trade off-theory assumes that a firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing, holding the firm's assets and investment plans constant. Whereas, pecking order theory is another dimension of the capital structure theories. According to this theory capital structure is driven by firm's desire to finance new investments, first internally, then with low-risk debt, and finally if all fails with equity. Therefore, the firms prefer internal financing to external financing.

Agency theory focuses on the costs which are created due to conflicts of interest between shareholders, managers and debt holders. According to this theory capital structures are determined by agency costs, which includes the costs for both debt and equity issue. This shows that theories of capital structure have been resulting in different conclusions.

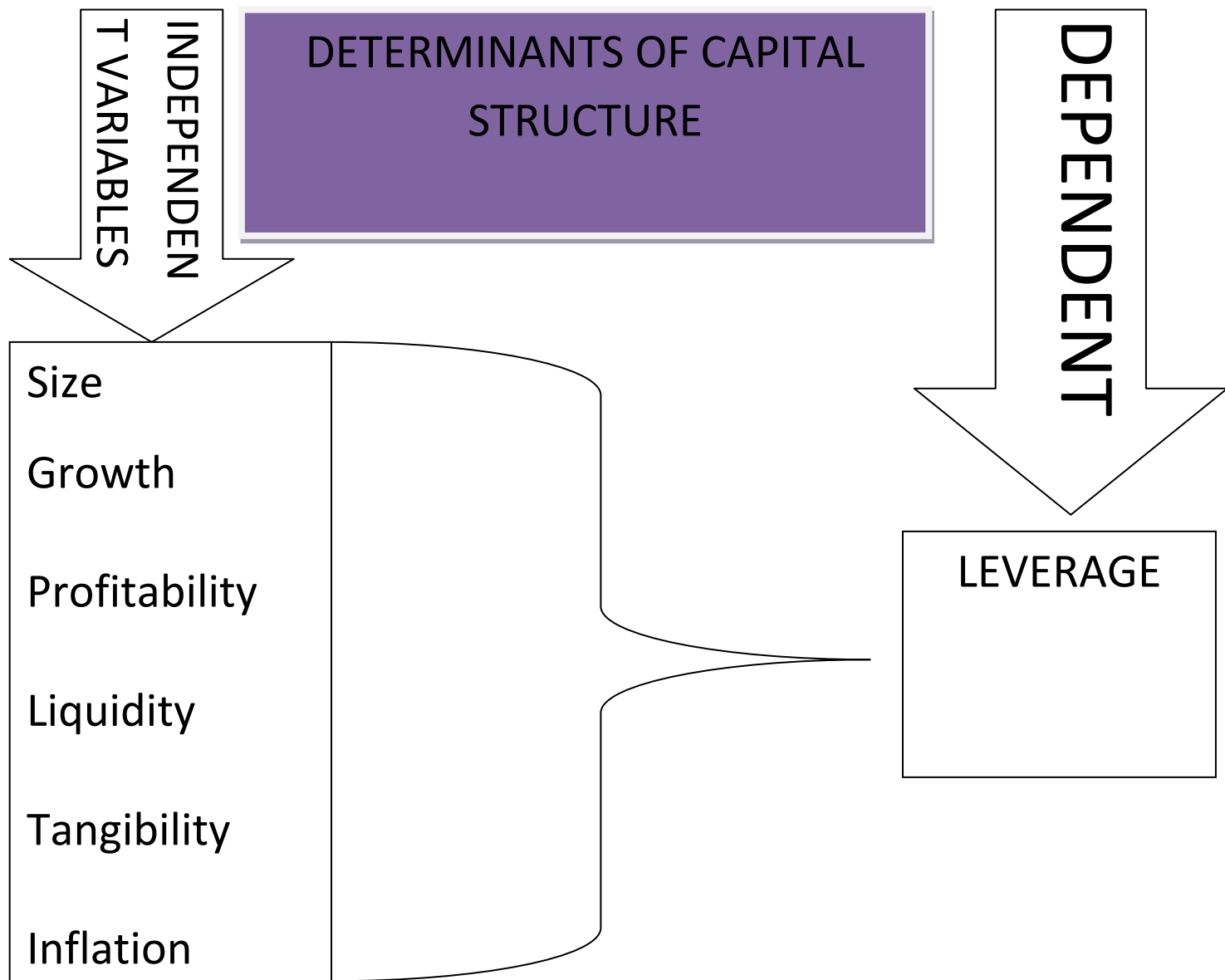
Similarly, the findings of prior empirical studies have provided varying evidence related to the determinants of capital structure. For instance, Caglayan and Sak (2010) have studied the determinants of capital structure of banks in Turkish and provided evidence that pecking order theory is pertinent theory to Turkish banks. Beside, Buferna et al. (2005) provided evidence that trade of theory and agency are pertinent theories of the capital structure to a developing country. On the other hand, Amidu (2007) on Ghanaian banks supports the static trade-off and pecking order argument. However, in the context of Ethiopia, as per the researcher knowledge based on the available literature, there were few studies that have been conducted in relation with capital structure determinants as compared to other countries. Among those studies, Ashenafi(2005) a case study in Addis Ababa small and medium enterprise, Amanuel (2011) evidence from manufacturing share companies in Addis Ababa city, Mintesinot(2010) evidence from selected manufacturing private limited companies of Tigray region, Bayeh (2011) , Solomon (2012),Mohammed (2014) and Daniel(2015) separately in case of insurance companies of Ethiopia, Kibrom (2010) and Woldemikael (2012) separately evidence from Ethiopian banking sector were reviewed by the researchers. To the best of researcher knowledge, most capital structure studies to date are based on data from developed countries' firms and very few studies provide evidence from developing countries. The capital structure of banks has not also been investigated; there is no clear understanding on how banks construct their capital structure and what internal and external factors influence their corporate financing decision. Thus, the lack of agreement about what would qualify as optimal capital structure, lack of literature in the case of Ethiopia and all available previous studies conducted in determinants of commercial banks not incorporate external factors on their research work has motivated this study. Therefore, given the unique financial features of banks and the environment in which they operate, there is a strong ground to conduct separate study on capital structure determinants in banks.

Therefore, this study would be fill the gap by examining both the internal and external factors of the determinants of capital structure in the context of Ethiopian banking industry.

2.7 Conceptual Framework

From the theoretical and empirical literature reviews, the following conceptual framework of the study is developed by the researcher

Figure 2.3 the conceptual framework or model of the study



Source: - Compiled by researcher mainly based on Mohammed, (2014)

CHAPTER THREE

Research methodology

This chapter deals with research methodology used to carry out the research. The chapter is organized in six sub sections. In its first part there is a research design, then after it presented subsequently about research approach, data type and source ,target population and sampling technique, method of data analysis and model specification.

3.1 Research design

Cooper et al. (2003) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. Thus, explanatory research design was used in this research because the study identifies the cause and effect of determinants of capital structure of commercial banks which is appropriate for the objective of the study.

3.2 Research approach

As noted in Creswell (2003), in an investigative study there are three familiar types of research approaches to business and social research namely, quantitative, qualitative and mixed methods approach. Though, each approach has its own strengths and limitations, Creswell (2003) advocates that certain types of social research problems call for specific approaches. Hence, in selecting an approach one should take in to account the nature of the research problem, the personal experience of the researcher, and the audience for whom the report will be written.

Considering the research problem and objective along with the philosophy of the different research approaches, the quantitative nature of the data collected, quantitative research approach was found to be appropriate for this study.

Besides, Panel data of nine commercial banks for ten years (2007 to 2016) was used. This is because of that panel data has the advantage of giving more informative data as it consists of both

the cross-sectional information, which captures individual variability, and the time-series information, that captures dynamic natures of the data.

3.3. Data type and source

The researcher collected quantitative types of data as secondary data from annual audited financial statements of selected commercial banks in Ethiopia and NBE.

3.4. Target population and sampling technique

The population of the study was all commercial banks in Ethiopia registered by National Bank of Ethiopia (NBE). According to the reports of National banks of Ethiopia, currently sixteen private banks and two government banks are working in Ethiopia. From these 18 banks only 16 banks are private owned commercial banks.

In line with balanced panel data approach, to meet the desired objective of this study and to make generalization from sample to population, the researcher used maximum combination of years and number of banks and achieved the maximum number of observations through purposive sampling technique. Accordingly, based on the years of establishment the researcher selected nine banks in the study. Thus, banks that operate less than ten years were excluded from the sample. Due to this, from 17 commercial banks operating in the country this study takes sample of nine banks namely, Dashen bank (DB), Awash bank (AIB), Bank of Abyssinia (BOA), Wegagen bank (WB), United bank (UB), Lion international bank (LIB), Nib international bank (NIB), cooperative bank of Oromia (CBO) and Commercial bank of Ethiopia (CBE) for the period of 2007 to 2016.

3.5. Method of data analysis

To achieve the objectives the study, panel data of nine commercial banks for ten years (2007 to 2016) was used. This is because of that panel data has the advantage of giving more informative data as it consists of both the cross-sectional information, which captures individual variability, and the time-series information, that captures dynamic natures of the data. And hence it ensures more variability, more degrees of freedom, more efficiency, and less collinearity among variables (Gujarati, 2004).

Using statistical package of Eview9 software, the collected panel data was analyzed using the descriptive statistics and multiple regressions.

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

Furthermore, diagnostic tests were managed in order to check the validity of the model based on the assumption of the Classical Linear Regression Model. Specifically, the assumption tests that were managed in this study include Heteroskedasticity Test, Autocorrelation Test, and test for Multicollinearity and Normality.

Accordingly, to perform a heteroscedasticity test the popular white test was used. In this test, if the p-value is very small, less than 0.05 the null hypothesis of the variance of the residuals is homogenous must be rejected. As noted in Brooks (2008) this test is the most popular because it makes few assumptions about the likely form of the heteroscedasticity. Gujarati (2004) indicates that Heteroskedasticity is a systematic pattern in the errors where the variances of the errors are not constant. Similarly, Brooks (2008) noted that if the errors do not have a constant variance, they are said to be heteroscedastic.

On the other hand, multicollinearity means that there is linear relationship between explanatory variables which may cause the regression model biased (Gujarati, 2004). When there is strong correlation between variables it becomes difficult to identify the impact of individual independent variables. Thus, in order to examine the possible degree of multicollinearity among the explanatory variables, correlation matrixes of the selected explanatory variables was used. Usually the multicollinearity exists if the correlation between two independent variables is more than 0.75 (Malhotra, 2007).

Beside, the researcher tested assumption of no serial correlation of the residuals. This assumption implies that the errors associated with one observation are not correlated with the errors of any other observation. For this purpose, Durbin-Watson (DW) measure was used. According to Brooks (2008), DW has 2 critical values: an upper critical value and a lower critical value, and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure 3.1. So, the null hypothesis is rejected and the existence of positive autocorrelation presumed

if DW is less than the lower critical value; the null hypothesis is rejected and an existence of negative autocorrelation is presumed if DW is greater than 4 minus the lower critical value; the null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper critical value and 4 minus the upper limits; the null hypothesis is neither rejected nor not rejected if DW is between the lower and the upper limits, and between 4 minus the upper and 4 minus the lower limits.

Table: 3.1: Rejection and Non-Rejection Regions for DW Test

Reject H0: Positive Autocorrelation	Do not reject H0: No evidence of of Autocorrelation	Reject H0: Negative Auto-correlation				
	Inconclusive		Inconclusive			
0	dL	dU	2	$4-dU$	$4-dL$	4

In addition, it's important that the residuals from the regression models should follow the normal distribution. Normality assumption of the regression model was tested with the Jarque- Bera measure. If the Jarque Bera value is greater than 0.05, the hypothesis of the normality must be fail to rejected (Brooks, 2008).

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. Ths, 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 used to analyze the determinants of commercial banks in Ethiopia, and to examine the relationship between the variables used in this study.

3.6. Model Specification

According to Brooks (2008), it is very easy to generalize the simple model to one with k regressors (independent variables). $Y_i = \beta_1 + \beta_2 X_{1i} + \beta_3 X_{2i} + \dots + \beta_k X_{ki} + \varepsilon_i$, $i = (1, 2, \dots, i)$. So, Where Y_i is the i^{th} observation of the dependent variable, X_{1i}, \dots, X_{ki} are the i^{th} observation of the independent variables, β_0, \dots, β_k are the regression coefficients, ε_i is the i^{th} observation of the stochastic error term.

Accordingly, to test the determinants of commercial banks in Ethiopia, the researcher estimated a linear regression model in the following form.

$$LEV_{it} = \beta_0 + \beta_1 GR_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 LQ_{it} + \beta_5 PT_{it} + \beta_6 INF_{it} + \varepsilon$$

Source: developed by researcher mainly based on Mohammed, (2014)

Where:

LEV = Firm Leverage

β_0 = Constant coefficient

$\beta_1 - \beta_6$ = Regression coefficients for measuring independent variables

GR = growth opportunities, SIZE = firm size, TANG = tangibility of fixed asset, LQ = liquidity of the firm, PT= Profitability, INF= inflation

i = no of Commercial banks

t = time period from 2007-2016

ε = Error term

Table 3.2: Description of variables and their expected relationship

<i>Variables</i>	<i>Measure</i>	<i>Expected Sign</i>
<i>Dependent Variable</i>		
<i>Leverage</i>	<i>The ratio of Total Debt to Total Assets</i>	
<i>Independent Variables</i>		
<i>Profitability</i>	<i>Ratio of operating income to total Assets (ROA)</i>	-
<i>Growth opportunities</i>	<i>Annual change in the total assets</i>	+
<i>Inflation</i>		+
<i>Size</i>	<i>Natural logarithm of total assets</i>	+
<i>Tangibility of fixed assets</i>	<i>Ratio of total fixed assets to total assets</i>	+
<i>Liquidity</i>	<i>Ratio of current assets to current liabilities</i>	-

Source: Compiled by researcher mainly based on Mohammed, (2014)

CHAPTER FOUR

4. Data Analyses and Discussion of Results

The previous chapter presented the research methodology applied to meet the objective of the study. This chapter presents the results and analysis of the findings as well as discussion of results. The chapter is organized in to four sections. Section 4.1 presents summary of statistics. Then Section 4.2 and 4.3 presents Correlation analysis and the Classical Linear Regression Model assumptions tests respectively. Finally, section 4.4 presented results of regression analysis and the summary of findings.

4.1 Descriptive statistics

As clearly mentioned in earlier chapters, in this study a sample of nine commercial banks for 10 year (2007 – 2016) were considered. The audited financial statements, particularly balance sheet and income statements collected directly from the respective banks and National Banks of Ethiopia (NBE). In this study Leverage was taken as a dependent variable. Whereas, Growth, Tangibility, Profitability, Size of the firm, Liquidity and inflation of the firms were used as independent variables.

Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables for nine commercial banks of Ethiopia for the period of 10 years from year 2007-2016 with a total of 90 observations.

Table 4.1: Descriptive Statistics

	LEV	GR	INF	LQ	PT	SIZE	TANG
Mean	0.865204	0.293231	0.171500	0.475456	0.055348	21.34199	0.019177
Median	0.879750	0.241500	0.146500	0.422800	0.058000	22.80300	0.015000
Maximum	0.963000	1.152000	0.364000	1.378000	0.094000	26.58300	0.064180
Minimum	0.494000	0.000000	0.028000	0.183900	0.010377	6.049733	0.003000
Std. Dev.	0.062439	0.190343	0.108910	0.204412	0.014578	4.938605	0.012492
Observations	90	90	90	90	90	90	90

Source: Financial statements of sample banks and own computation

The Table 4.1, shows the mean, standard deviation, number of observations, minimum and maximum for the dependent and independent variables of the model. It shows that the average indicators of variables computed from the financial statements.

The mean leverage (total debt to total asset) of banks was 86.52 percent with the standard deviation of 6.24 percent. This means that more than 86.52 percent of the banks in Ethiopia were financed by debts. This highlights that debt ratio was high in this study. Leverage for the sample period ranged from 49.40 percent to 96.30 percent with a standard deviation of 6.24 percent. Profitable firms are stronger to face financial distress and stronger to continue more than unprofitable firms in the future. Profitability, given as the ratio of pre-tax profits plus interest expense to total assets, registered a mean value of 5.53 percent indicating a return on assets of 5.53 percent, and median of 5.80 percent with a standard deviation of 1.46 percent and profitability for the sample ranged from 1.04 percent to 9.40 percent. This shows that the existence of great variation in profit among banks in Ethiopia. Growth was measured as the annual percentage change in total asset and this shows a mean of 29.32 percent. This indicates that, on average, growth rate was 29.32 percent during the ten-year's period and growth in total asset for the sample period were ranged from 0.000 percent to

115.20 percent with standard deviation of 19.03 percent. This indicates the existence of high variation in growth rate among banks in Ethiopia. Tangibility, measured by fixed asset to total asset shows that on average, 1.92 percent of the firms' assets were fixed. The fixed assets to total asset for the sample were ranged from 0.30 percent to 6.42 percent with standard deviation of 1.25 percent. The mean of the firms' size which was represented by the natural logarithm of total assets was 21.34 and median was 22.80 with a standard deviation of 4.94. Natural logarithms of total assets for the sample were ranged from 6.05 to 26.58. Besides, summary of test statistic shows that the mean of liquidity was 47.55 percent and the median of 42.28 percent with the standard deviation of 20.44 percent. This reveals as there was high variation in liquidity among Ethiopian banks. Beside, for the study sample liquidity was ranged in between 18.39 percent to 137.80 percent.

Finally, the mean value of inflation rate of assets was 0.1715. The maximum and the minimum value of inflation rate was 0.364 and 0.028 respectively. The standard deviation of inflation rate was 0.108910 which shows the existence relatively lower variation of inflation rate over the last ten years as compared to the standard deviation of size, but it is higher as compared to the standard deviation of tangibility.

4.2 Correlation analysis

Table 4.2, shows the correlation between the explanatory variable and leverage in this study. As noted in Brooks (2008), Correlation between two variables measures the degree of linear association between them. Values of the correlation coefficient are always ranged between positive one and negative one. A correlation coefficient of positive one indicates that a perfect positive association between the two variables; while a correlation coefficient of negative one indicates that a perfect negative association between the two variables. A correlation coefficient of zero, on the other hand, indicates that there is no linear relationship between the two variables.

The correlation matrix in Table 4.2 shows that leverage (dependent variable) was negatively correlated with growth, tangibility, inflation and liquidity of the firm. Which indicates that firm with higher leverage have less liquidity, growth, tangibility and inflation. However, size and profitability have positive correlation with leverage. The result also shows that leverage was correlated at 0.134270, 0.285798, -0.308518 and 0.402213 with growth, size, tangibility and profitability

respectively and had statistically significant correlation. Similarly, leverage was correlated at -0.043379 & -0.518331 with inflation & liquidity respectively and had statistically insignificant correlation.

Table 4.2: correlation matrix

	LEV	GR	INF	LQ	PT	SIZE	TANG
LEV	1.000000						
GR	-0.134270	1.000000					
INF	-0.043379	0.127775	1.000000				
LQ	-0.518331	0.317955	0.235289	1.000000			
PT	0.402213	-0.486314	-0.102906	-0.304863	1.000000		
SIZE	0.285798	-0.453677	-0.055493	-0.192415	0.447815	1.000000	
TANG	-0.308518	-0.124889	-0.227068	-0.223347	-0.080392	-0.126030	1.000000

Source: Financial statements of sample banks and own computation

4.3 Tests for the Classical Linear Regression Model (CLRM) assumptions

This section presents the test for the assumptions of classical linear regression model (CLRM) namely the error has zero mean, heteroskedasticity, autocorrelation, normality and multicollinearity.

4.3.1 Assumption one: the errors have zero mean ($E(\epsilon) = 0$)

The regression model used in this study included a constant term. As clearly stated in Brooks (2008), if a constant term is included in the regression equation, this assumption will not be violated. Hence, this assumption was not violated in the study.

4.3.2 Assumption two: homoscedasticity (variance of the errors is constant ($\text{Var}(u_t) = \sigma^2 < \infty$))

As indicated by Brooks (2008), this assumption requires that the variance of the errors to be constant. If the errors do not have a constant variance, it is said that the assumption of homoscedasticity has been violated. The violation of this assumption is called heteroscedasticity. In this study heteroskedasticity white test was used to test for the existence of heteroskedasticity across the range of explanatory variables.

Table 4.3: Heteroskedasticity Test: White

F-statistic	0.601284	Prob. F(11,77)	0.8222
Obs*R-squared	7.040164	Prob. Chi-Square(11)	0.7958
Scaled explained SS	9.030942	Prob. Chi-Square(11)	0.6190

Source: Financial statements of sample banks and own computation

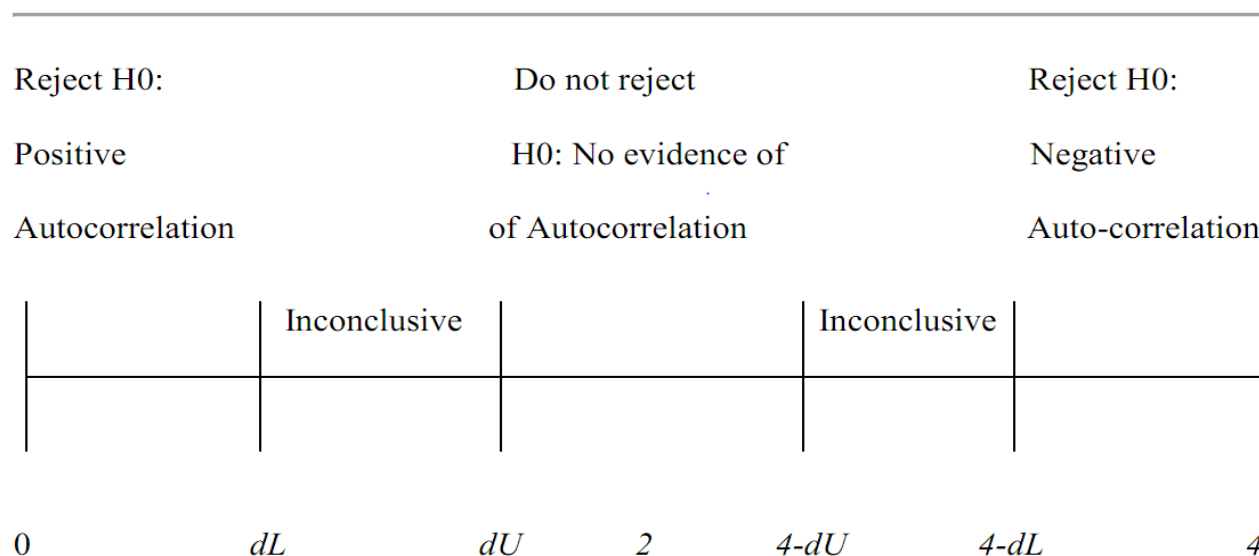
As it is indicated in table 4.3 the result shows that the F- statistics, R-squared and scaled explained SS versions of the test statistic give the same conclusion that the p-values (p-values =0.8222,0.7958 and 0.6190) were greater than 0.05. Therefore, the absence of heteroscedasticity was confirmed.

4.3.3 Assumption three: covariance between the error terms over time is zero
($\text{cov}(u_t, u_j) = 0$) for $i \neq j$

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

The study used both Durbin-Watson (DW) and Breusch-Godfrey test for the existence of autocorrelation. In addition, lagged value of a variable (LEV (-1)) is used in this research in order to adjust the autocorrelation. As per Brooks (2008) lagged the value is simply the value that the variable took during a previous period. So from the regression result DW is 2.122 it is close to two.

Table 4.4: Rejection and non-rejection regions for Durbin-Watson Test



Source: Financial statements of sample banks and own computation

Therefore, to test for autocorrelation, the DW test critical values were used. Then, relevant critical lower and upper values for the test are $dL= 1.518$ and $dU=1.801$ respectively. The values of $4 - dU = 4-1.801=2.199$; $4 - dL = 4-1.518= 2.482$.

The Durbin-Watson test statistic of 2.122 is clearly found on the non rejection region so that there is no evidence for the presence of autocorrelation.

In addition, another test called Serial Correlation LM Test also managed to validate the result of the DW test result. The 6 lag Breusch-Godfrey Serial Correlation LM Test result as indicated in the below Table 4.5 shows that the P-values of F-statistic and Obs*R-squared are greater than 0.05 and hence, the null hypothesis is not rejected and no significant residual autocorrelation is presumed.

Table 4.5 :Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.722994	Prob. F(6,71)	0.1282
Obs*R-squared	11.31180	Prob. Chi-Square(6)	0.0792

Source: Financial statements of sample banks and own computation

4.3.4 Assumption for: Multicollinearity Test

Brooks (2008), states that an implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. However, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multicollinearity.

Malhotra (2007) stated that multicollinearity problems exists when the correlation coefficient among explanatory variables should be greater than 0.75. However, Brooks (2008) mentioned that if the correlation coefficient along with the independent variables is 0.8 and above, multicollinearity problems will be existed.

Table 4.6 Correlation Matrix between independent variables

	GR	INF	LQ	PT	SIZE	TANG
GR	1.000000					
INF	0.127775	1.000000				
LQ	0.317955	0.235289	1.000000			
PT	-0.486314	-0.102906	-0.304863	1.000000		
SIZE	-0.453677	-0.055493	-0.192415	0.447815	1.000000	
TANG	-0.124889	-0.227068	-0.223347	-0.080392	-0.126030	1.000000

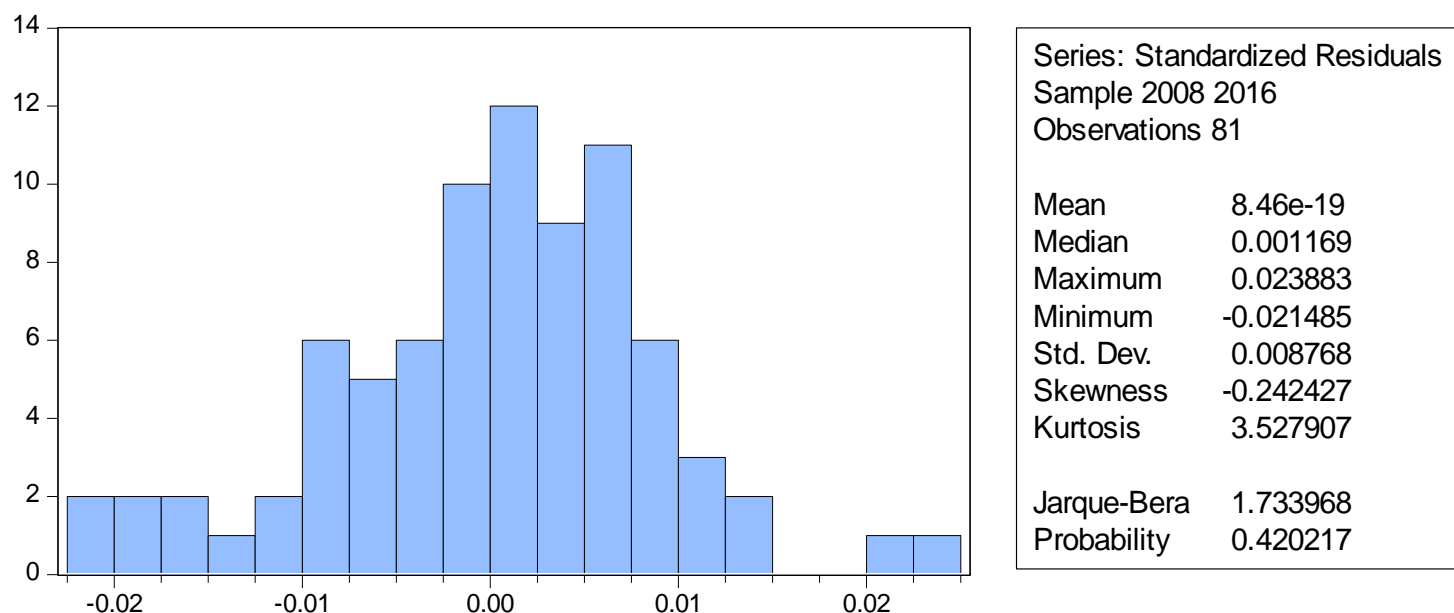
Source: Financial statements of sample banks and own computation

The method used in this study to test the existence of multicollinearity was by checking the Pearson correlation between the independent variables. The correlations between the independent variables are shown in table 4.6 above. All correlation results are below 0.75, which indicates that multicollinearity is not a problem for this study.

4.3.5 Assumption for: normality (errors are normally distributed ($ut \sim N(0, \sigma^2)$) Test of Normality

Brooks (2008) stated also that if the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant. That is, the p-value given at the bottom of the normality test screen should be greater than 0.05 to not reject the null hypothesis of normality at the 5% significant level.

Figure 4.1 Normality Test



Source: Financial statements of sample banks and own computation

From the above figure 4.1 we can conclude that there is no problem of normality. That is, the coefficient of kurtosis was close to 3, skewness close to zero and the Bera-Jarque statistic has a P-value of 0.420217 implying that the data were consistent with a normal distribution assumption.

4.4. Random Effect versus Fixed Effect Models

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

Table 4.7, presents the Hausman specification test which suggests the fixed effects model was better than random effects model as the p-value (0.0001), is less than 0.05 for dependent variables

which imply that the random effects model should be rejected and thus, the analysis is based on the fixed effects estimates.

Table 4.7: Correlated Random Effects - Hausman Test

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	27.760242	6	0.0001

Source: Financial statements of sample banks and own computation

4.4.1. Results of Regression analysis

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

$$LEV_{it} = \beta_0 + \beta_1 GR_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 LQ_{it} + \beta_5 PT_{it} + \beta_6 INF_{it} + \varepsilon$$

Source: developed by researcher mainly based on Mohammed, (2014)

.Where:

LEV = Firm Leverage

β_0 = Constant coefficient

$\beta_1 - \beta_6$ = Regression coefficients for measuring independent variables

GR = growth opportunities, SIZE = firm size, TANG = tangibility of fixed

Asset, LQ = liquidity of the firm, PT= Profitability, INF= inflation

i = no of Commercial banks

t = time period from 2007-2016

ε = Error term

This study used panel data models where the random effect and fixed effect models could be used to estimate the relationships among variables. An appropriate model for this analysis, testing random versus fixed effects models, was selected. To perform this comparison, the character of the individual effects was tested through the Hausman's specification test. According to Hausman test results shown in table 4.9, the fixed effects were found to be more appropriate for the model at the 1 percent level. Thus, the relationship between leverage and the explanatory variables were examined by the fixed effects model in this study. The result obtained by the fixed effect model is reported in Table 4.8.

Table 4.8: Fixed Effect Model Estimates

Dependent Variable: LEV

Method: Panel Least Squares

Date: 12/26/17 Time: 13:16

Sample (adjusted): 2008 2016

Periods included: 9

Cross-sections included: 9

Total panel (balanced) observations: 81

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.312637	0.062504	5.001840	0.0000
GR	0.054484	0.010111	5.388672	0.0000
INF	-0.013722	0.011433	-1.200213	0.2346
LQ	0.002169	0.010911	0.198811	0.8431
PT	-0.440307	0.129209	-3.407711	0.0011
SIZE	0.006698	0.003202	2.091776	0.0405
TANG	-0.433667	0.147053	-2.949049	0.0045
DUM116	0.045916	0.010887	4.217675	0.0001
DUM112	0.034165	0.010903	3.133449	0.0026
LEV(-1)	0.501445	0.036534	13.72549	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.959910	Mean dependent var	0.871295
Adjusted R-squared	0.949092	S.D. dependent var	0.043790
S.E. of regression	0.009880	Akaike info criterion	-6.203439
Sum squared resid	0.006150	Schwarz criterion	-5.671339
Log likelihood	269.2393	Hannan-Quinn criter.	-5.989954
F-statistic	88.73218	Durbin-Watson stat	2.122365
Prob(F-statistic)	0.000000		

Source: Financial statements of sample banks and own computation

The fixed effect result in table 4.8 indicates that size was strongly statistically significant (p-value = 0.0000) at 1 percent level and had positive relation with leverage ratio. Similarly, tangibility was strongly statistically significant (p-value = 0.0045) at 1 percent level and had negative relation with leverage ratio. In the same way, growth was statistically significant (p-value = 0.0000) at 1 percent level and had positive relation with leverage ratio, profitability was strongly statistically significant (P-value =0.0011) at 1percent level and had negative relationship with leverage ratio. But inflation and liquidity do not have statistically significant relationship with leverage with a p-value of 0.2346 and 0.8431 respectively. Furthermore the table 4.8 shows that the adjusted R square is 0.94909 which indicates that about 94.91 percent of the variability in leverage is explained by the selected internal & external factor (Profitability, Tangibility, Growth, liquidity, Size and inflation).

4.4.2. Summary of Findings

The preceding section presents the overall results of the study. Thus, this section discusses in detail the analyses of the results for each explanatory variable and their importance in determining leverage ratio. In addition, the discussions analyses the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the relationship between explanatory variables and leverage ratio. ‘

Profitability

The results of fixed effect model in table 4.8 indicated that profitability had a negative relationship with leverage, and statistically significant (p-value = 0.0011) at 1% level. Thus, the result was in accordance with the expected sign. This implies that every one percent change (increase or decrease) in bank’s profitability keeping the other thing constant has a resultant change of 44.03 percent on the leverage in the opposite direction. This result also shows that, higher profits increase the level of internal financing in Ethiopian banking industry. Beside, the result revealed the suggestions that profitable banks accumulate internal reserves and this enables them to depend less on external funds. Even though, profitable banks may have better access to external financing, the need for debt finance may possibly be lower, if new investments can be financed from accumulated reserves.

The result of this study is consistent with the pecking order theory that suggests profitable firms prefer internal financing to external financing. Beside, a negative relationship between profitability and leverage was observed in the majority of empirical studies Rajan and zingales (1995), Amidu (2007), and Caglayan and Sak (2010) were some of them.

Size

The result of fixed effect model table 4.8 indicated that Size had positive relationships with the leverage of banks, and statistically significant (p-value = 0.0405) at 5% level. This implies that every one percent change (increase or decrease) in the banks size keeping the other thing constant had a resultant change of 0.006698 birr (Coeff.=0.006698) or 1 percent on the leverage in the same direction. The results also suggested that the bigger the bank, the more external funds it will use. The possible reason is that, larger banks have lower variance of earnings, and the providers of the debt capital are more willing to lend to larger banks as they are perceived to have lower risk levels.

In addition, the results confirm the concept that large firms can borrow more easily, either because of a better reputation or because of a perceived lower risk due to better diversification. This is largely consistent with the Static Trade-off Theory and agency cost theory. Beside, many previous studies indicated a similarly strong significant positive relationship, for example Titman & Wessels, (1988), Rajan and Zingales, (1995), Booth et al., (2001), Amidu (2007), and Caglayan and Sak (2010) were some of them.

Tangibility

The results of fixed effect model table 4.8 indicated that the relationship between tangibility and leverage was found to be negative and statistically significant (p-value = 0.0045) at 1percent level. Therefore, the result was not in accordance with the expected sign. The result also implies that every one percent change (increase or decrease) in the banks tangibility keeping the other thing constant had a resultant change of 43.37 percent on the leverage in the opposite direction. This significant negative relationship between tangibility and leverage contradicts with various previous research findings like Rajan and Zingales (1995), Amidu (2007), and Frank and Goyal (2009) which suggest that firm's borrowing capability depends upon collateralizable value of assets

(tangibility) and with theories (Static trade-off theory and asymmetric theory) which stated the positive relation between leverage and tangibility.

The likely reason of this relationship might be that banking industry in Ethiopia had a close relationship with creditors, because the relationship can substitute for collateral.

Liquidity

The results of fixed effect model table 4.8 indicated that liquidity had a positive relationship with leverage, and statistically not significant (p -value = 0.8431). Thus, the result was not in accordance with the expected sign which state that there is negative relationship between leverage and liquidity. This positive sign shows that firms with more liquidity tend to use external borrowing due to their ability in paying off their liabilities. But, this finding suggested that liquidity is not determinant factor of bank's leverage in Ethiopia because banks in Ethiopia adopt the pecking order theory rather than tradeoff theory.

Growth

The results of fixed effect model table 4.8 indicate that growth had a positive relationship with leverage and statistically significant ($p=0.0000$) at 1% level. Thus, the result was in accordance with the expected sign which states that there is positive relationship between leverage and growth. This positive sign shows the direct relationship between the growth and leverage. In other words it implies that every one percent change (increase or decrease) in bank growth opportunities keeping the other thing constant had a resultant change of 5.45 percent on the leverage in the same direction. The positive and statistically significant influence of growth in this study was consistent with the empirical studies of Ahmed et al.(2010),Noulas and Genimaks(2011),kumar et al.(2012) and sharif et al .(2012) found growing firms are financed by debt. However, it contradicts with the studies of Najjar and Petrov (2011),Rajan and Zinglas(1995),Amidu (2007) and Titman and Wessle (1988) that showed growing firms are more financed by equity instead of debt. The finding of positive association between growth and leverage could be that growing banking firms should rely more and more on external borrowing to seize market opportunities. This argument is supported by pecking order theory, which argues firms prefer debt financing for their growth instead of equity due to its

riskiness. The probable reason for this result could be growing banks can expand their branches to reach to additional customers (expand market share), which enables them to borrow more debt.

Inflation

The results of fixed effect model in table 4.8 indicated that inflation had a negative relationship with leverage and statically not significant due to monetary policy of the country. Thus, the result was not in accordance with the expected sign. The findings also suggested that as inflation is not a determinant factor of bank’s leverage in Ethiopia as far as the parameter for this variable is insignificant as illustrated by large p-value of 0.2346. Inflation is one of the macroeconomic independent variable employed by the researcher in this study. This finding was consistent with previous studies made by Farah et al.,(2014) and saddam Mohammedamin (2014).

Table 4.9: comparison of Test result with expectation

Independent variables	Expected relationships with LEV	Actual result
Profitability	-	-
Size of the firm	+	+
Tangibility	+	-
Growth	+	+
Liquidity	-	+
Inflation	+	-

CHAPTER FIVE

Summary, Conclusion and Recommendation

The earlier chapter presented the results and discussion, whereas this chapter deals with the summary, conclusions and recommendations based on the findings of the study.

Accordingly this chapter is organized into three sub-sections.

5.1 Summary

The choice of determinant factor of capital structure is one of the most important strategic financial decisions of firms. Since the seminal work of Modigliani and Miller (1958), the issue of capital structure has attracted intense debate in the field of corporate finance. The basic question is whether there exists an optimal capital structure and what might be its determinants. Extensive research has attempted to identify these factors; however, the findings of prior empirical studies have provided varying evidence related to the impact of these factors on capital structure. Furthermore, the majority of these studies have been conducted in developed countries that have many institutional similarities.

In light of the above, the main objective of this study was to examine the relationship between leverage and determinants of capital structure decision, and to understand about theories of capital structure that can explain the capital structure of banks in Ethiopia. To achieve the intended objective the study used quantitative approaches of panel data analysis methodology. The quantitative data were collected through survey of document reviews from a sample of nine banks over the time period from 2007-2016. The collected data were analyzed by employing a fixed effect model using statistical package 'EViews 9'.

In order to conduct the empirical analysis, the determinants of capital structure were selected based on previous studies and three prominent theories of capital structure: static trade-off theory, pecking order theory and agency theory, and tried to find out which one explain better the financial decision behavior of the sampled commercial banks. All these theories possess different traits to explain the corporate capital structure.

Static trade-off theory suggests that optimal capital structure is a trade -off between net tax benefit of debt financing and bankruptcy costs. Pecking order theory also states that firms prefer internal

financing to external financing and risky debt to equity due to information asymmetries between insiders and outsiders of firm. Agency cost theory illustrates the financial behavior of firms in context of agent and principal relationship.

5.2 Conclusion

The researcher has formulated six hypotheses. For testing these hypotheses, six explanatory attributes from array of renowned previous research works on the determinant of capital structure have been selected. To achieve the intended objectives, data from nine Commercial banks in Ethiopia for Ten years (2007– 2016) against each attribute has been collected from respective annual reports. Total debt to Total assets of the company was used as the leverage ratio.

The study specifically examines the relationship between leverage and determinants of capital structure of commercial banks in Ethiopia based on the following conclusion:

- Profitability had a negative and statically significant relationship with leverage which was also in line with the expected sign. This result also supports the pecking order theory and prefers using internal finance before raising debt or equity.
- Similarly, asset tangibility had negative and statistically significant relationship with leverage, which is in line with the extended form of pecking order theory. It is an indication that companies with smaller share of tangible assets tend to be more subject to information asymmetries. It is because intangible assets are more difficult to price and hence the cost of debt increases. This is in agreement with information asymmetry theory.
- Regarding to the effect of, the size had positive and statistically significant relationship with leverage, which was consistent with static trade- off theory and Agency cost Theory. The result also implies that the bigger the bank, the more external funds it will use.
- Besides, growth had positive & statically significant relationship with leverage which also in line with expected sign .The results show that banking firms depend more on debt to finance their growth. This finding consistence with Pecking order Theory's.

- Surprisingly, liquidity had positive relationship with leverage and statistically not significant. Finally, inflation had a negative relationship with leverage, and statistically not significant.

In conclusion, the finding of the study suggests that growth, tangibility, profitability and bank size were important variables that influence banks' capital structure. However, there were no support of banks liquidity and inflation influencing the level of leverage of banks in Ethiopia. The results also, confirms that pecking order theory was pertinent theory in Ethiopian banking industry, while there were little evidence to support static trade-off theory and the agency cost theory.

5.3. Recommendations

In light of the major finding obtained from the results, the following recommendations were made:

- The analyses indicated that the variables of profitability, liquidity, size and tangibility were significantly related to leverage ratio. Therefore, banks should pay greater attention to these significant variables in determining their optimal capital structure.
- The study indicated that the pecking order theory prominently appears to exert influence on capital structure of banks in Ethiopia. It is, therefore, important for this industry to be focused at optimizing the internal source of finance as an optimal mix for capital structure.
- Considering the current growth opportunity for banks in Ethiopia and the dominant theory explain the financing behavior of commercial banks in Ethiopia being pecking order theory as per this study, internal sources of fund should also be considered. Otherwise, it may lead to bankruptcy by loading more debt on Commercial banks in Ethiopia.
- On the other hand, according to the static trade off theory, commercial banks in Ethiopia can obtain optimal capital structure by trading off between net tax benefit of debt financing and bankruptcy costs. To do so, commercial banks should strengthen their relationships with customers and other financial institutions, which enable them to raise more debts.
- The study also shows that, banks in Ethiopia mainly use debt as external source of finance. Thus, the managements of Banks should place greater emphasis on the facilitation of equity

capital in order to obtain sufficient capital to expand their branch network which in turn creates greater market share for them.

- In connection with the above recommendation, the negative relation between tangibility of assets and leverage implies that investors in banking industry in Ethiopian might not be using their tangible assets as collateral for debt financing and there might not be proper valuation of the assets due to information asymmetry. Thus, the managements of banking industries should do more in eliminating the information asymmetries with investors.
- Financing access, either debt or equity, is the major issue for any firm for the expansion of its business. These equity and debt financing can be facilitated from capital markets. Therefore, the government should work hard to establish or facilitate the establishment of capital market to mitigate financing problem besides to the banks role in loan access.

Directions for further research

This study examined mainly firm specific determinants of capital structure of banks in Ethiopia because of resource and time limitation. Thus, future researcher may address these deficiencies by including external variable like interest rate, GDP, corporate governance, legal framework, ownership structure, impact of the country's financial system should be added in order to demonstrate the impact of both internal and external variables on the choice of capital structure.

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Appendix 1:-Descriptive Analysis

	LEV	GR	INF	LQ	PT	SIZE	TANG
Mean	0.865204	0.293231	0.171500	0.475456	0.055348	21.34199	0.019177
Median	0.879750	0.241500	0.146500	0.422800	0.058000	22.80300	0.015000
Maximum	0.963000	1.152000	0.364000	1.378000	0.094000	26.58300	0.064180
Minimum	0.494000	0.000000	0.028000	0.183900	0.010377	6.049733	0.003000
Std. Dev.	0.062439	0.190343	0.108910	0.204412	0.014578	4.938605	0.012492
Skewness	-2.872910	1.826825	0.593580	1.189881	-1.093032	-2.203496	1.480974
Kurtosis	16.74980	7.402741	2.068693	5.667451	5.043418	6.518021	5.320824
Jarque-Bera	832.7676	122.7498	8.537552	47.91960	33.57913	119.2427	53.09759
Probability	0.000000	0.000000	0.013999	0.000000	0.000000	0.000000	0.000000
Sum	77.86840	26.39078	15.43500	42.79106	4.981286	1920.779	1.725942
Sum Sq. Dev.	0.346979	3.224520	1.055669	3.718816	0.018915	2170.694	0.013888
Observations	90	90	90	90	90	90	90

Appendix 2:-Hausman Test

Correlated Random Effects - Hausman Test

Equation: EQ01

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	27.760242	6	0.0001

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
GR	0.055864	0.057574	0.000011	0.6028
INF	0.018103	-0.009193	0.000078	0.0020
LQ	-0.050892	-0.119834	0.000206	0.0000
PT	0.423817	1.186974	0.045405	0.0003
SIZE	0.033053	0.002501	0.000058	0.0001
TANG	-2.151662	-1.805791	0.020151	0.0148

Cross-section random effects test equation:

Dependent Variable: LEV

Method: Panel Least Squares

Date: 12/26/17 Time: 11:28

Sample: 2007 2016

Periods included: 10

Cross-sections included: 9

Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.182305	0.162533	1.121645	0.2656
GR	0.055864	0.023422	2.385160	0.0196
INF	0.018103	0.034806	0.520110	0.6045
LQ	-0.050892	0.025659	-1.983388	0.0510
PT	0.423817	0.378850	1.118694	0.2668
SIZE	0.033053	0.007778	4.249378	0.0001
TANG	-2.151662	0.374564	-5.744438	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.772935	Mean dependent var	0.865204
Adjusted R-squared	0.730550	S.D. dependent var	0.062439
S.E. of regression	0.032411	Akaike info criterion	-3.869611
Sum squared resid	0.078787	Schwarz criterion	-3.452976
Log likelihood	189.1325	Hannan-Quinn criter.	-3.701599
F-statistic	18.23589	Durbin-Watson stat	1.036535
Prob(F-statistic)	0.000000		

Appendix 3:-Heteroskedasticity Test

Heteroskedasticity Test: White

F-statistic	0.601284	Prob. F(11,77)	0.8222
Obs*R-squared	7.040164	Prob. Chi-Square(11)	0.7958
Scaled explained SS	9.030942	Prob. Chi-Square(11)	0.6190

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 12/26/17 Time: 13:17

Sample: 2 90

Included observations: 89

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000829	0.000443	1.871639	0.0651
GR^2	-0.000290	0.000288	-1.007372	0.3169
INF^2	0.000275	0.000879	0.312923	0.7552
LQ^2	0.000138	0.000263	0.526601	0.6000
PT^2	0.020828	0.031674	0.657578	0.5128
SIZE^2	-2.08E-07	2.75E-07	-0.754292	0.4530
TANG^2	-0.035375	0.057766	-0.612387	0.5421
DUM10^2	-0.000121	0.000359	-0.336675	0.7373
DUM61^2	-0.000392	0.000604	-0.649849	0.5177
DUM81^2	0.000101	0.000439	0.229097	0.8194
DUM6^2	-0.000200	0.000363	-0.550499	0.5836
LEV(-1)^2	-0.000801	0.000524	-1.526966	0.1309

R-squared	0.079103	Mean dependent var	0.000184
Adjusted R-squared	-0.052454	S.D. dependent var	0.000342
S.E. of regression	0.000351	Akaike info criterion	-12.94509
Sum squared resid	9.50E-06	Schwarz criterion	-12.60954
Log likelihood	588.0565	Hannan-Quinn criter.	-12.80984
F-statistic	0.601284	Durbin-Watson stat	2.055301
Prob(F-statistic)	0.822160		

Appendix 4:-Test of Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.722994	Prob. F(6,71)	0.1282
Obs*R-squared	11.31180	Prob. Chi-Square(6)	0.0792

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 12/26/17 Time: 13:18

Sample: 2 90

Included observations: 89

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.028106	0.036256	0.775209	0.4408
GR	-0.004093	0.011919	-0.343387	0.7323
INF	-0.002146	0.016186	-0.132566	0.8949
LQ	0.006051	0.011812	0.512244	0.6101
PT	0.115108	0.150388	0.765406	0.4466
SIZE	0.000127	0.000392	0.323390	0.7474
TANG	-0.047504	0.159471	-0.297885	0.7667
DUM10	-0.009462	0.015139	-0.625010	0.5340
DUM61	0.005811	0.021818	0.266342	0.7907
DUM81	0.008379	0.017950	0.466819	0.6421
DUM6	0.003336	0.015525	0.214873	0.8305
LEV(-1)	-0.043607	0.038832	-1.122975	0.2652
RESID(-1)	0.313073	0.124502	2.514593	0.0142
RESID(-2)	-0.066357	0.130014	-0.510386	0.6114
RESID(-3)	0.231096	0.129521	1.784234	0.0787
RESID(-4)	0.087522	0.133567	0.655269	0.5144
RESID(-5)	0.071009	0.134189	0.529171	0.5983
RESID(-6)	0.020383	0.126321	0.161360	0.8723

R-squared	0.127099	Mean dependent var	-2.47E-16
Adjusted R-squared	-0.081906	S.D. dependent var	0.013638
S.E. of regression	0.014186	Akaike info criterion	-5.494590
Sum squared resid	0.014288	Schwarz criterion	-4.991270
Log likelihood	262.5092	Hannan-Quinn criter.	-5.291716
F-statistic	0.608116	Durbin-Watson stat	1.865688
Prob(F-statistic)	0.874724		

Appendix 5:-Raw data used for analysis

Bank	Year	SIZE	TANG	PT	LQ	LEV	INF	GR
1(AIB)	2007	22.066	0.01611	0.041	0.362	0.899117	0.158	0.297
1	2008	22.296	0.011781	0.043562	0.477	0.876	0.253	0.286
1	2009	22.583	0.023	0.05	0.642	0.883	0.364	0.333
1	2010	22.796	0.029	0.064	0.662	0.882	0.028	0.237
1	2011	23.037	0.025	0.071	0.523	0.871	0.181	0.273
1	2012	23.2978	0.027	0.062	0.3189	0.902	0.341	0.184
1	2013	23.602	0.032	0.067	0.273	0.915	0.135	0.355
1	2014	23.819	0.032	0.071	0.336	0.883	0.081	0.243
1	2015	23.951	0.038	0.082	0.2096	0.8736	0.077	0.14
1	2016	24.111	0.039	0.0597	0.254	0.919	0.097	0.1745
2(DB)	2007	22.522	0.016	0.058	0.344	0.909869	0.158	0.247463
2	2008	22.781	0.012	0.063	0.474	0.907	0.253	0.296
2	2009	22.999	0.011	0.057	0.593	0.907	0.364	0.243
2	2010	23.237	0.013	0.057	0.518	0.909	0.028	0.269
2	2011	23.408	0.013	0.065	0.526	0.905	0.181	0.183
2	2012	23.587	0.015	0.074	0.41	0.896	0.341	0.199
2	2013	23.706	0.016	0.066	0.382	0.896	0.135	0.127
2	2014	23.813	0.027	0.069	0.37	0.882	0.081	0.112
2	2015	23.933	0.027	0.068	0.279	0.882	0.077	0.128
2	2016	24.0758	0.0279	0.0591	0.3018	0.882	0.097	0.154
3(BOA)	2007	21.946	0.012	0.046	0.376	0.881	0.158	0.198
3	2008	22.175	0.015	0.027	0.415	0.902	0.253	0.257
3	2009	22.424	0.014	0.047	0.6	0.891	0.364	0.283
3	2010	22.561	0.012	0.051	0.576	0.891	0.028	0.147
3	2011	22.708	0.012	0.058	0.477	0.891	0.181	0.159
3	2012	22.832	0.01159	0.06032	0.3726	0.8899	0.341	0.132
3	2013	23.041	0.02606	0.06	0.232	0.891	0.135	0.233
3	2014	23.146	0.02578	0.059	0.30189	0.864	0.081	0.10986
3	2015	23.338	0.0639	0.05449	0.259	0.8675	0.077	0.212
3	2016	23.546	0.06418	0.0546	0.2276	0.8737	0.097	0.231
4(WB)	2007	21.97	0.009	0.06	0.485	0.884	0.158	0.541
4	2008	22.14	0.01	0.068	0.608	0.853	0.253	0.185
4	2009	22.356	0.011	0.066	0.782	0.857	0.364	0.241
4	2010	22.471	0.014	0.069	0.774	0.868	0.028	0.122
4	2011	22.81	0.014	0.069	0.695	0.864	0.181	0.404
4	2012	22.845	0.037	0.07165	0.4517	0.8078	0.341	0.035506
4	2013	23.064	0.0347	0.0598	0.295	0.8238	0.135	0.245
4	2014	23.168	0.0475	0.0558	0.3585	0.814	0.081	0.109
4	2015	23.341	0.0467	0.054	0.2345	0.8239	0.077	0.189
4	2016	23.5076	0.04573	0.05068	0.2795	0.8267	0.097	0.181
5(UB)	2007	21.504	0.015	0.058	0.492	0.835	0.158	0.365
5	2008	21.902	0.01	0.058	0.567	0.856	0.253	0.489
5	2009	22.261	0.009	0.048	0.687	0.888	0.364	0.431
5	2010	22.498	0.007	0.06	0.693	0.892	0.028	0.267
5	2011	22.768	0.008	0.061	0.59	0.883	0.181	0.31
5	2012	22.8965	0.010266	0.094	0.4236	0.8746	0.341	0.137
5	2013	22.0236	0.010833	0.062	0.2557	0.8796	0.135	0.136

5	2014	23.1978	0.01585	0.0538	0.3599	0.8673	0.081	0.19
5	2015	23.3877	0.023416	0.0518	0.2307	0.8825	0.077	0.209
5	2016	23.572	0.028	0.0552	0.2238	0.8799	0.097	0.20256
6(NIB)	2007	21.681	0.016	0.057	0.37	0.837	0.158	0.286
6	2008	22.018	0.012	0.061	0.54	0.836	0.253	0.4
6	2009	22.293	0.012	0.061	0.708	0.848	0.364	0.317
6	2010	22.51	0.012	0.063	0.743	0.846	0.028	0.242
6	2011	22.685	0.011	0.065	0.71	0.835	0.181	0.191
6	2012	22.8365	0.0115	0.065	0.4677	0.815	0.341	0.1636
6	2013	22.936	0.0135	0.0616	0.316	0.8178	0.135	0.1049
6	2014	23.0979	0.02	0.0599	0.2418	0.817	0.081	0.175
6	2015	23.308	0.023	0.0559	0.1839	0.836	0.077	0.233
6	2016	23.485	0.0248	0.05586	0.2397	0.8409	0.097	0.194
7(LIB)	2007	19.402	0.0445	0.0196	1.378	0.494	0.158	0
7	2008	20.168	0.027	0.01267	0.972	0.702	0.253	1.152
7	2009	20.675	0.018	0.0158	0.629	0.7986	0.364	0.659
7	2010	21.033	0.014	0.0509	0.728	0.8223	0.028	0.432
7	2011	20.316	0.011	0.049	0.831	0.805	0.181	0.326
7	2012	21.625	0.009	0.0588	0.7978	0.821	0.341	0.362
7	2013	21.803	0.00986	0.07	0.5898	0.816	0.135	0.195
7	2014	22.008	0.013	0.05566	0.687	0.826	0.081	0.228
7	2015	22.491	0.011	0.0652	0.6219	0.8596	0.077	0.622
7	2016	22.8175	0.011	0.0559	0.2895	0.868	0.097	0.386
8(CBE)	2007	24.49347	0.005548	0.035127	0.78	0.902584	0.158	0.211084
8	2008	24.64213	0.005939	0.047744	0.47	0.909245	0.253	0.160284
8	2009	24.80776	0.006581	0.056119	0.36	0.914919	0.364	0.180128
8	2010	25.02985	0.008315	0.047882	0.29	0.925122	0.028	0.248692
8	2011	25.46179	0.006659	0.046868	0.358	0.945202	0.181	0.540233
8	2012	25.78657	0.005405	0.060767	0.422	0.951819	0.341	0.383732
8	2013	25.99854	0.005394	0.055981	0.313	0.952931	0.135	0.236104
8	2014	26.1263	0.004	0.061	0.365	0.954	0.081	0.249
8	2015	26.324	0.006	0.058	0.421	0.959	0.077	0.386
8	2016	26.583	0.003	0.062	0.381	0.963	0.097	0.546
9(CBO)	2007	6.049733	0.018868	0.010377	0.6317	0.6509	0.158	0.892857
9	2008	6.519447	0.018509	0.02949	0.6714	0.7817	0.253	0.599535
9	2009	6.930376	0.028912	0.01534	0.4588	0.8475	0.364	0.508218
9	2010	7.477785	0.019793	0.03563	0.6209	0.893	0.028	0.728768
9	2011	7.824283	0.025313	0.04438	0.6146	0.901	0.181	0.414107
9	2012	8.208145	0.023604	0.05421	0.3881	0.8864	0.341	0.467943
9	2013	8.785496	0.037299	0.05376	0.6996	0.8935	0.135	0.781314
9	2014	8.90261	0.017933	0.07834	0.3389	0.8517	0.081	0.124247
9	2015	9.346798	0.017195	0.05395	0.3307	0.8768	0.077	0.559224
9	2016	9.271078	0.02322	0.02503	0.25397	0.88509	0.097	0.072924