

**DETERMINANTS OF CAPITAL STRUCTURE IN COMMERCIAL
BANKS:EVIDENCE FROM PRIVATE COMMERCIAL BANKS IN
ETHIOPIA**

**A RESEARCH SUBMITTED TO DEPARTMENT OF ACCOUNTING AND
FINANCE FOR THE PARTIAL FULFILMENT OF THE REQUIREMENT
OF BACHELOR OF ART DEGREE INACCOUNTING AND FINANCE**

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JUNE, 2019
WOLKITE, ETHIOPIA

Acknowledgements

First and foremost, I want to thank the Almighty Lord for endowing me the endurance and courage of going through in my whole life. Next to Almighty God First, I would like to greatly express my utmost gratitude and indebtedness to my advisor Dr Rao (PhD) for his expert guidance, helpful criticism, valuable suggestions and encouragement at every stage during the completion of this work. I like to express my unreserved and deepest love to my family for their love, encouragement and help throughout my academic life. Really, you deserve my gratitude, may almighty God bless all of you.

Finally, yet importantly, my acknowledgement goes to Wolkite University for providing the necessary fund for the study.

ABSTRACT

Determining the optimal capital structure is one of the most fundamental policy decisions faced by financial managers. Since optimal debt ratio influences firm's value, different firms determine capital structures at different levels to maximize the value of their firms. Thus, this study examines the relationship between leverage and firm specific (profitability, tangibility, growth, age, and size) determinants of capital structure decision, and the theories of capital structure that can explain the capital structure of banks in Ethiopia. In order to investigate these issues a mixed method research approach is utilized, by combining documentary analysis and in-depth interviews. More specifically, the study uses ten years (2007 - 2016) data for six banks in Ethiopia. The findings show that profitability, size, tangibility of the banks are important determinants of capital structure of banks in Ethiopia. However, growth of banks was 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 was little evidence to support static trade-off theory and the agency cost theory. Therefore, banks should give consideration to profitability, size, and tangibility when they determine their optimum capital structure.

KEY WORDS: capital structure, leverage, firm specific variable, Ethiopian private commercial banks

Declaration

I, Ephrem Adamu, declare that this senior essay entitled: Determinants of capital structure of private Commercial Banks in Ethiopia and submitted in partial fulfillment of the requirements for bachelor of art degree in Accounting and Finance, is outcome of my own effort & study and that all sources of materials used for the study have been duly acknowledged. I have produced it independently with only guidance and suggestion of my thesis Advisor Dr Rao (PHD). The study complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Advisor and Examiner Approval

This senior essay has been submitted for examination with my approval as a university advisor.

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List of Acronyms

CBE	Commercial bank of Ethiopia
BDE	Development bank of Ethiopia
CLRM	classical liner regression model
GR	growth
Lev	leverage
NBE	national bank of Ethiopia
OLS	ordinary least square
PR	profitability
RS	risk
SZ	size
TA	tangibility
WACC	weighted average cost of capital

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

The term capital structure is used to represent the proportionate relationship between debt and equity (Pandey, 2008). The various means of financing represent the financial structure of an enterprise. Traditionally, short term borrowings are excluded from the list of methods of financing the firm's capital expenditure. Capital structure decisions are one of the three financing decisions – investment, financing, and dividend decisions – finance managers have to make (Van Horne, 1989). Capital structure of a firm determines the weighted average cost of capital (WACC). WACC is the minimum rate of return required on a firm's investments and used as the discount rate in determining the value of a firm. A firm can create value for its shareholders as long as earnings exceed the costs of investments (Damodaran, 2001).

These studies point out the importance of the relationships among capital structure, cost of capital, capital budget decisions, and firm value. Although capital structure theory is a widely studied topic, subsequent to the departures from Modigliani and Miller (1958)'s irrelevance proposition, there is a long tradition in corporate finance to investigate the capital structure decisions of non-financial firms and not financial firms such as banks. The standard textbook answer is that there is no need to investigate banks' financing decisions, since capital regulation constitutes the overriding departure from the Modigliani and Miller (1958) propositions.

Taken literally, this suggests that there should be little cross-sectional variation in the leverage ratio of those banks falling under the Basel regulatory regime, since it prescribes a uniform capital ratio. In a recent study, Gropp & Heider (2009) noted that standard cross-sectional determinants of firms' capital structures also apply to large, publicly traded banks in the US and Europe, except for banks close to the minimum capital requirement. Dakito (2014) noted that banks in Ethiopia are generally well-capitalized with an overall capital adequacy ratio of 10.4% comparable or considerably above that in other emerging economies and above the 8% recommended by Basel Core Principles.

A substantial literature on accounting and finance has undertaken to identify what drives one of the key corporate financial policies, the capital-structure decision. The study by Modigliani and Miller (1958) sought to examine this issue. They offer evidence that capital-structure is unrelated to the value of a firm. Five years later, the same authors relaxed the perfect market assumptions

and added corporate taxes in their models (Modigliani and Miller, 1963). Consequently, they found that the value of a firm will be enhanced if the level of debt increases.

1.2 .Statement of the Problem

According to Korajczyk (2003), banks and other financial institutions are specialized businesses, which capital structure is affected by a series of conditions of the financial industry, such as governmental regulations and access to insurance instruments of the Federal government, which includes deposits. Owing to these fundamental roles, banks have always been concerned with both solvency and liquidity. Given the central role of market and credit risk in their core business, the success of banks depends on their ability to identify, assess, monitor and manage these risks in a sound and sophisticated way. In order to assess and manage risks, banks must have effective ways of determining the appropriate amount of capital that is necessary to absorb unexpected losses arising from their market, credit and operational risk exposures.

Thus given the above foregoing analysis, the given Ethiopian banking sector provides an interesting case to assess the determinants of capital structure. In a study on determinants of capital structure of banks in Ghana, Amidu (2007) found that profitability, corporate tax, growth, asset structure and bank size influenced banks' financing or capital structure decision. Gonzalez and Gonzalez (2008) studied how bank market concentration and institutions affect capital structure in 39 countries and found that firm leverage increases with bank concentration and the protection of credit rights, but decreases with the protection of property rights. Gropp and Heider (2009) examine whether capital requirements are a first-order determinant of banks' capital structure and found that capital regulation and buffers may only be of second order importance in determining the capital structure of most banks. In Kenya, Olweny and Shiphoo (2011) studied the effects of banking sector factors on profitability of private commercial banks and found that capital adequacy had a statistically significant impact on bank profitability's. These studies found that capital structure of nonfinancial institutions are influenced by factors such as size, profitability, growth, asset structure, risk, non-debt tax shields, free cash flows, commercial trade position, age, and corporate governance. Therefore a research gap on the determinants of capital structure of commercial banks in Ethiopia. As much as the banks are regulated, evidence has shown that regulation is a second-order determinant of capital structure of banks and that there are considerable similarities between banks' and non-financial firms' capital structures (Gropp and Heider, 2009). As per the researcher's access and knowledge, the researchers conducted on

determinants of capital structure so far in Ethiopian case are by Ashenafi (2005) and Kibrom (2010) Ashenafi (2005) approached the question of capital structure using data from medium firms in Ethiopia. He took variables like age of firms, size of firms, tangibility, profitability and growth are regressed against leverage. The results proved that, profitability, growth, tangibility, and age showed a negative coefficient of correlation with debt to equity ratio. Recently Kibrom (2010) also uncovered the fact that the two variables (profitability and growth) established negative relationship and the remaining three variables (tangibility, size, and age) showed positive relationship with capital structure. As a result, profitability variable attained an inverse relationship with capital structure measure that supports Pecking order theory, but opposes the Static trade-off theory. Thus the researcher motive to conduct this research due to lack of agreement about optimal determinant of capital structure and as per the researcher knowledge lack of literature regarding Commercial banks and private commercial banks.

This study therefore seeks to answer the following question: what are the firm specific determinants of capital structure on privet commercial banks of Ethiopia

1.3. Objective of the study

1.3.1. General Objectives

- The objective of this study is to find out the determinants of capital structure of commercial banks of Ethiopia and Private commercial banks in Ethiopia.

1.3.2. Specific Objectives

This study attempted to achieve the following specific objectives:

- To measure the effect of change in profitability on the financing mix (leverage) of commercial banks of Ethiopia and Private commercial banks in Ethiopia,
- To find out the extent to which variations in bank size explain the variations in debt to equity ratio of commercial banking of Ethiopia and Private commercial banking business in Ethiopia,
- To determine the effect of a change in growth of commercial banks of Ethiopia and Private commercial banks on their leverage

- To determine the consequence of change in the tangibility of assets held by commercial banks of Ethiopia and Private commercial banks of Ethiopia on the debt to equity ratio

- To explain which theory pertinent to Ethiopian commercial banks and private commercial banks.

1.4. Hypothesis of the study

Profitability:

Capital structure theories have different views on the relationship between leverage and profitability. The trade-off theory argues that firms generally prefer debt for tax considerations. Profitable firms would, therefore, employ more debt because increased leverage would increase the value of their debt tax shield (Myers 1984). In addition to the tax advantage of debt, agency and bankruptcy costs may encourage highly profitable firms to have more debt in their capital structure.

Tangibility:

Tangibility is an important determinant of the capital structure of a firm. The trade-off theory predicts a positive relation between tangibility and debt levels. As the value of intangible assets disappears (almost entirely) in the cases of bankruptcies, the presence of tangible assets is expected to be important in external borrowing as it is easy to collateralize them.

Size:

According to trade-off theory, firm size could be an inverse proxy for the probability of the bankruptcy costs. Larger firms are likely to be more diversified and fail less often. They can lower costs (relative to firm value) in the occasion of bankruptcy. Larger firms are more likely to have higher debt capacity and are expected to borrow more to maximize the tax benefit from debt because of diversification (Titman and Wessels (1988). Therefore, size has a positive effect on leverage. Size can be regarded as a proxy for information asymmetry between managers and outside investors. Large firms are subject to more news than small firms because the investment community would be more concerned with gathering and providing information about large firms.

Growth:

According to pecking order theory firms with high growth will tend to look to external funds to finance the growth. Myers (1977) confirms this and concludes that firms with a higher proportion of their market value accounted for by growth opportunity will have debt capacity. Therefore, it is expected that there is a positive relationship between growth and leverage ratio.

Age:

Age of the firm is a standard measure of reputation in capital structure models. As a firm continues longer in business, it establishes itself as an ongoing business and therefore increases its capacity to take more on debt; hence age is positively related to debt. Before granting a loan, banks tend to evaluate the creditworthiness of entrepreneurs as these are generally believed to pin high hopes on very risky projects promising high profitability rates. If the investment is profitable, shareholders will collect a significant share of the earnings, but if the project fails, then the creditors have to bear the consequences (Myers, 1977).

H1=there is a negative and significant relationship between profitability and leverage ratio.

H2=there is a positive and significant relationship between tangibility and leverage ratio.

H3=there is a positive and significant relationship between the firm' s size and its leverage ratio.

H4=there is appositive and significant relationship between growth and leverage ratio.

H5=there is appositive and significant relationship between affirms age and its leverage ratio.

1.5. Scope and limitation of the study

The scope of this study is limited to the relationship between leverage and determinants of capital structure decision of private commercial banks over the period 2007to 2016 for ten years data in order strengthen the reliability. Six private commercial banks selected from the population of 16 privet commercial banks the main reason delimited to privet commercial banking sector is share common attributes in accounting practices, corporate governance and corporate control also the reason for this study delimited to private commercial banks due to their contribution to GDP is relatively the same unlike the state owned by privet commercial banks of Ethiopia. To this end, this study was limited to firm specific determinants of capital

structure (profitability, growth, tangibility, size and age) and theories of capital structure that can explain the capital structure of private commercial banking industry.

1.6. Significance of the study

Studies by Weldemikael (2012) & Kibrom (2010) investigated the determinants of capital structure of firms in Ethiopia. However, to the best knowledge of the researcher there is no study that has focused on private commercial banks of Ethiopia. Thus, this study has significant role to play in filling gap in understanding of the capital structure decision for banks in Ethiopia. Such an understanding is important, because it equips financial managers with applied knowledge of determining their capital structure. As an appropriate capital structure is important to a firm as it will help in dealing with competitive environment within which the firm operates, and which will maximize the return of the stockholders by increasing the value of the firm. Additionally, this study will be used as an input to researchers for further research on determinant of capital structure.

1.7. Organization of the Paper

This study was organized into five chapters. Chapter one presents research introduction, statement of the problem, objective of the study, scope 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 present results and analysis of the study and finally, chapter five present conclusions and recommendations.

CHAPTER TWO

2. REVIEW OF RELATED LITRATURE

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. Two major sources of financing that are available to firms are debt and equity. The mixture of debt and equity is called capital structure. Most of the effort of the financial decision making process is centered on the determination of the optimal capital structure; are the firms' value is maximized and cost of capital is minimized.

2.1. Theoretical review

The literature shows the existence of different theories related to capital structure. These theories include Modigliani and miller (MM), static trade-off theory, pecking order theory, and agency cost theory. The purpose of this section is, hence, to review these theories of capital structure in an orderly.

2.1.1. Modigliani and Miller (MM) theory

Modigliani and Miller (1958) argued that capital structure is irrelevant to the value of a firm under perfect capital market conditions with no corporate tax and no bankruptcy cost. This implies that the firm' s debt to equity ratio does not influence its cost of capital. A firm' s value is only determined by its real asset, and it cannot be changed by pure capital structure management consequently, it means that there is no optimal capital structure.

However, there is a fundamental difference between debt financing and equity financing in the real world with corporate taxes. Dividends paid to shareholders come from the after tax profit. By contrast, interest paid to bondholders comes out of the before-tax profits. Thus, Miller and Modigliani (1963) argued that in the presence of corporate taxes, a value-maximizing decision on capital structure can be helpful to minimize these costs.

2.1.2. Static Trade-off Theory

Trade-off theory claimed that a firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing, holding the firm's assets and investment plans

constant (Myers, 1984). The goal is to maximize the firm value for that reason debt and equity are used as substitutes. According to this theory, higher profitability decreases the expected costs of distress and let firms increase their tax benefits by raising leverage; therefore, firms should prefer debt financing because of the tax benefit. As per this theory firms can borrow up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased probability of financial distress (Ross, 2002, p.586).

Due to the net tax advantage to corporate debt financing, the firm's optimal capital structure will involve distinctions in firm-specific characteristics, target leverage ratios will vary from company to company. Institutional differences, such as different financial systems, tax rate and bankruptcy law etc, will also lead the target ratio to differ across countries. The trade-off theory predicts that safe firms, firms with more tangible assets and more taxable income to shield should have high debt ratios. While risky firms, firms with more intangible assets that the value will disappear in case of liquidation, ought to rely more on equity financing. In terms of Profitability, trade-off theory predicts that more profitable firms should mean more debt-serving capacity and more taxable income to shield, therefore, based on this theory, firms would prefer debt over equity until the point where the probability of financial distress starts to be important.

This is illustrated by figure 2.1

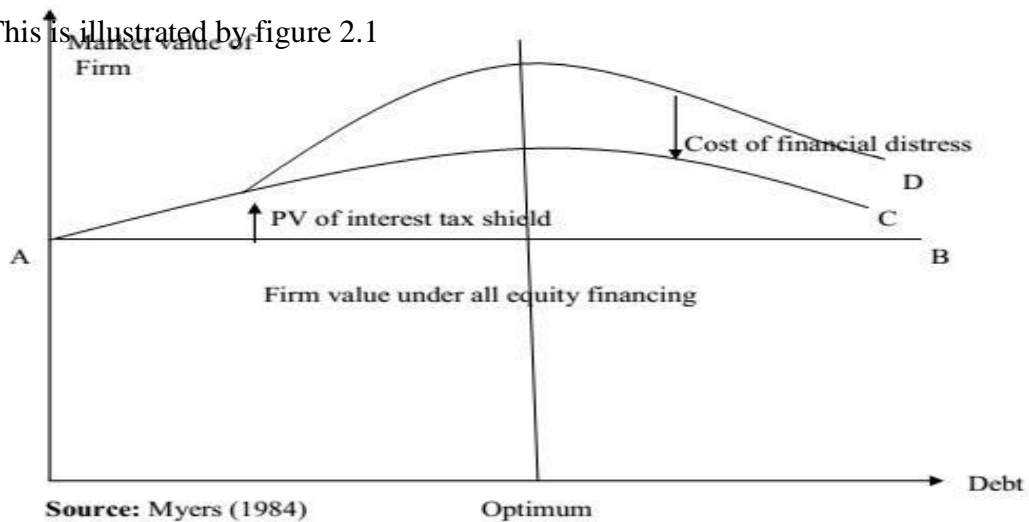


Figure 2.1: The-static-tradeoff theory of capital structure

In figure 2.1 the straight line AB shows the market value of the firm under the Modigliani and Miller (1958) regime, in which the value of the firm is irrelevant and the capital structure is equal to the value of an all-equity firm. If a firm uses debt in their capital structure they have to pay

interest which is generally tax deductible. Interest payments act as a tax shield and allow the firm to increase its value. As the firm takes more debt its value increases (curve AC). However, after a certain proportion of debt (the optimum level) the value of the firm starts to decrease as the costs of debt start to outweigh the benefits of debt. Curve AD illustrates how the costs of financial distress rise as firms use increasing amounts of debt in their capital structure. At higher levels of debt the interest payments of firms increase to cover for the potential risk of financial distress. Firms trade-off the tax benefits that may be gained through using debt with Costs of financial distress and agency costs to maintain an optimal level of debt in their capital structure as shown in figure 2.1.

2.1.3. Pecking order theory

Pecking Order Theory is developed by Myers and Majluf (1984) which stated that capital structure is driven by firm's desire to finance new investments, first internally, then with low-risk debt, and Investment and financing decisions. According to this theory, informational asymmetry, which firm's managers or insiders have inside information about the firm's returns or investment opportunities, increases the leverage of the firm with the same extent. So due to the asymmetries.

They demonstrate that if there is an asymmetry of information between investors and firm insiders, then the firm's equity may be underpriced by the market. As a result, new equity, which is used to finance new investment projects, will be also underpriced. Therefore, if management has favorable inside information and acts in the best interest of the existing shareholders, then management will refuse to issue equity even if it means passing up positive net present value Projects because the net loss to existing shareholders (due to underpricing problem) might outweigh the project's Net present values. On the other hand,

Passing up positive net present value projects is contrary to the wealth maximization. Using financial sources that may not be undervalued by the market, particularly internally generated funds could solve this under-investment problem.

2.1.4. Agency cost theory

The next important theory mentioned in the literature is the agency cost theory. This theory was developed by Jensen and Meckling in their 1976 publications. This theory considered debt to be a necessary factor that creates conflict between equity holders and managers. Both scholars used this theory to argue that the probability distribution of cash flows provided by the firm is not

independent of its ownership structure and that this fact may be used to explain optimal capital structure. Jensen and Meckling recommended that, given increasing agency costs with both the equity-holders and debt-holders, there would be an optimum combination of outside debt and equity to reduce total agency costs.

Ryen et al. (1997) provide a theoretical summary of agency cost theory. According to Ryen et al., two sets of agency problems were faced by firms, conflict between managers and stockholders and conflict between stockholders and bondholders. For the managers and stockholders conflict, managers usually overspend or take less leverage and these are seen not benefiting the stockholders. Managers take lesser leverage in order to avoid total risk, which comprises of risk of losing job, reputation and wealth. On the other hand, overspending by managers to make opportunity loss of firms' cash flow which could be used on the activities that benefit stockholders.

Therefore, many studies had been diverted to find out the ways to reduce this agency costs between managers and stockholders. The conflict of shareholders and bondholders is another area of agency cost problem, whereby shareholders have better incentives to maximize their wealth at the expense of the bondholders by the increases in dividend rate, claim dilution, asset substitution and underinvestment. The only way bondholder can limit the action to benefit shareholders is to draft a bond covenants, an agreement to limit the firm on investment, financing, production, dividend payout and etc.

2.1.4.1. Shareholders-manager' s conflicts

This kind of conflict stems from the separation of ownership and control. If managers do not own 100% of the firm, they can only capture a fraction of the gain earned from their value enhancement activities but they need to bear the entire costs of these activities. The shareholders-manager' s conflicts take several distinct forms: According to Jensen and Meckling (1976) managers prefer to make use of less effort and have greater perquisite levels, such as luxuriant office and corporate jets, different from the shareholder' s interest of firm value maximization. In this case, increasing the managers' equity holdings will help to align the interests of shareholders and managers. Or, keeping manager' s equity investment constant, increasing the debt level also helps to mitigate the loss of conflicts between shareholders and managers. Since

debt forces managers to pay out cash, reducing the free cash flow managers can waste on the perquisites.

According to Masulis (1988) conflict may arise because managers may prefer short-term projects, which produce results early and enhance their reputation quickly, rather than more profitable long-term projects. According to Harris and Raviv (1991) managers want to stay in their positions, so they wish to minimize the likelihood of employment termination. As this increases with changes in corporate control, management may resist takeovers, irrespective of their effect on shareholder value. On operating decisions, managers and shareholders may shareholders. A special case of the conflicts between shareholders and managers is the firm to grow beyond the optimal size and accept negative net present value (NPV) projects. Jensen (1986) argued that the overinvestment problem can be motivated by more free cash flow and less growth opportunities. Issuing debt helps to mitigate agency problems that arise from managerial behavior under divergent interests between shareholders and managers.

2.1.4.2. Shareholder-bondholder conflicts

The typical phenomenon of these conflicts is that the shareholders or their representatives make decisions transferring wealth from bondholders to shareholders. Certainly, the bondholders are aware of the situations in which this wealth expropriation may occur, therefore, will demand a higher return on their bonds or debts. Different fundamental sources of equity-holders and debt-holder' s conflicts have been identified in the agency cost literature; the direct wealth-transfer from bondholders to shareholders (Smith and Warner 1979): Shareholders can increase their wealth at the expense of bondholders' interests by increasing the dividend payment; the issuance of debt with higher priority will expropriate wealth from current bondholders.

Asset-substitution is another source of the conflicts (Jensen and Meckling 1976): When Debt will be owned by shareholders and in case of failure, the consequence is mainly born by bondholders because of shareholders' limited liability. This excessive return from risky projects makes safe projects less attractive to shareholders since returns from the increase in risk premium. The increased costs of debt are then born by shareholders since they are residual claimants of the firm. Under investment problem is another agency problem results in shareholder bondholder conflicts Myers (1977): Underinvestment problem mostly incurs in financial distress. The extension of debt decreases the shareholder' s incentives to invest in new projects (even the

projects with high growth opportunities will be passed through) because the profits from these projects will be exhausted in debt repayment.

2.2. Empirical studies on the determinants of capital structure

Since the pioneering work of Modigliani and Miller (1958), the question of what determines firms' choices of capital structure has been a major field in the corporate finance literature. Since then, several studies have been conducted in developing and developed countries to empirical studies in this section on the determinants of capital structure decision has a particular focus on those that have been conducted since the 1980s.

Titman and Wessels (1988) studied the determinant of capital structure choice by examining them empirically. They extended empirical work on capital structure theory in three ways. First, they examined a much broader set of capital structure theories, many of which have not previously been analyzed empirically. Second, since the theories have different empirical implications in regard to different types of debt instruments, the authors analyzed measures of short-term, long-term, and convertible debt rather than an aggregate measure of total debt. Third, they used a factor-analytic technique that mitigates the measurement problems encountered when working with proxy variables.

In a comparative study, Rajan and Zingales (1995) investigated whether the capital structure in other developed countries is related to factors similar to those influencing the US companies for the period of 1987-1991. Tangible assets, market to book ratio, firm size and profitability are suggested as determinants of capital structure in these countries. They find that firms with more collateralized assets are not highly levered. In addition, they found that profitability and market to book ratio are negatively related to leverage.

However, they argue that the negative relationship with leverage appeared to be driven by firms with high market to book ratio rather than by firms with low market to book ratio. The study provides no evidence supporting the effect of the firm size on leverage. Finally, the findings were not varied across the G-7 countries so they concluded that capital structure in other countries was affected by factors similar to those that influence the US companies.

Booth et al. (2001) assessed whether capital structure theory is portable across Developing countries with different institutional structures. The sample firms in their study are from Malaysia, Zimbabwe, Mexico, Brazil, Turkey, Jordan, India, Pakistan, Thailand, and Korea. Booth et al. (2001) use three measure of debt ratio; total debt ratio, long-term book debt ratio, and long-term market debt ratio with average tax rate, assets tangibility, business risk, size, profitability, and the market to book ratio as explanatory variables.

The study showed that the more profitable the firm, the lower the debt ratio, regardless of how the debt ratio is defined. It also showed that the more the tangible assets, the higher the long-term debt ratio but the smaller the total debt ratio. Booth et al. (2001) concluded that the debt ratio in developing countries seemed to be affected in the same way by the same types of variables that are significant in developed countries. However, they pointed out that the long-term debt ratios of those countries are considerably lower than those of developed countries. This finding may indicate that the agency costs of debt are significantly large in developing countries or markets for long term debt are not effectively functioning in these countries.

Finally, Booth et al. (2001) argued that their results are in line with Rajan and Zingales (1995) except for the tax and the market-to-book ratio. Bevan and Danbolt (2002) who extended the work of Rajan and Zingales (1995) tested the determinants of capital structure in the United Kingdom non-financial firms by using four measures of financial leverage. They used non-equity liabilities to total assets, total debt to total assets, total debt to capital (where capital is defined as total debt plus common shares with preferred shares), and adjusted debt to adjusted capital. All the measures were regressed on market-to-book value, natural logarithm of sales (size), profitability, and tangibility of assets. They found that determinants of capital structure were significantly changed with respect to each measure of debt used. With the same leverage definition as Rajan and Zingales, Bevan and Danbolt (2002) reported similar results. In their later paper, Bevan and Danbolt (2004) analyzed the determinants of capital structure of 1054 UK Companies from the period 1991-1997. Secondly, they also investigated the extent to which the influence of these determinants is affected by time invariant and firm specific Heterogeneity.

Bevan and Danbolt (2004) as Bevan and Danbolt (2002) use market-to book value, natural logarithm of sales (size), profitability, and tangibility of assets as determinants of capital structure. In addition to the time invariant and firm specific heterogeneity, the focus was on the variety of long - run and short run debts components rather than on the aggregate measures. They found that large firms use long and short term debt more than small ones. Tangibility is found to be positively related to both short and long-term debt, while profitability is found to be negatively related. However, they find that profitable firms tend to use short-term debt more than less profitable one.

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.

2.4 Conceptual frame work

According to Mugeude et.al (2000) a conceptual frame work helps the reader to quickly see the proposed relationship between the variables in the study and show the same graphically. In this study independent variable whereas profitability, tangibility, firm size, growth and affirms age whereas dependent variable is leverage ratio.

Independent variable



Dependent variable



(Compiled by own design)

2.3. 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 tradeoff 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.

CHAPTER THREE

RESEARCH METHDODOLOGY

3. Introduction

This chapter specifically gives a brief description of the research method that will examine determinants of capital structure in commercial banks evidence from private commercial banks in Ethiopia. This includes research design, research approach adopted and data source. A detailed description of quantitative research approach tools with population and sampling, source of data and the data collection procedure, type of data analysis, model specification is also discussed.

3.1. Research Approaches

As noted in Creswell (2009) in terms of investigative study there are three familiar types of research approaches to business and social research namely, quantitative, qualitative and mixed methods approach. Therefore, the following discussion briefly presents the basic nature of quantitative, qualitative and mixed research approaches along with their respective merits and demerits. Quantitative research is a means for testing objective theories by examining the relationship among variables (Creswell 2009, p.4). In quantitative research approach there are two strategies of inquiries namely, survey design and experimental design.

Qualitative research approach is one in which the investigator often makes knowledge claims based primarily on the multiple meanings of individual experiences, socially and historically constructed meanings, participation in issues, collaboration or change oriented with an intent of developing a theory or pattern (Creswell 2003, p. 18). As noted in Sarantakos (2005, p. 45 cited in Yesegat 2009, p. 73) qualitative research approach uses strategies of inquiry such as narratives, ethnographies, grounded theory studies, or case studies. The key advantage of qualitative research design is that it discloses the richness of human experience (Lincoln and Guba 1985, cited in Dunn, 1999, p.37).

Mixed research is an approach to inquiry that combines or associates both qualitative and quantitative forms (Creswell, 2009). As a major advantage, when the investigator uses this approach he can learn more about the research problem (Leedy and Ormrod, 2005 cited in Semu 2010, p. 44). In connection to this, Greene et al. (1989, p. 256, cited in Yesegat, 2009, p.

75) also emphasized that as all methods have inherent biases and limitations, so use of only one method to assess a given phenomenon will inevitably yield biased and limited results.

3.2. Research Design

This research presents an empirical analysis of determinants of capital structure of private banking and commercial banking sector in Ethiopia with most recent available data. It is an explanatory research and has employed a quantitative method. A multivariate regression model is used to analyze the data collected from the financial statements of commercial banks operating in Ethiopia which have an age 10 years and above. Based on the regression outputs, test of the data used and hypotheses; and analysis of the result are made. The analyses are presented by using descriptive approach.

3.3. Sampling Design

For fair and uniform comparison and to obtain valid results, commercial banks are selected. In other words, the reason why commercial banking sector is chosen is: Firstly, commercial banking business is emerging and also flourishing in Ethiopian economy are the literature on determinants of capital structure is limited. Secondly, the commercial banks share common attributes in accounting practices, corporate governance and corporate control. As a result, Development (DBE), Construction and Business (CBE) and other banks are not considered due to their specialized business objectives.

Sample of six commercial banks are selected from the population of 16 commercial banks. In other words, the entire population of private commercial banks that exists, at least, for the last ten years (2007-2016) is selected and secondary data was collected from their 10 years' financial statements. Therefore, pooling the cross sectional data of 10 years for 6 commercial banks, there are total 60(sixty) observations in the regression analysis. For this reason, using purposive sampling, the selected banks are Dashen Bank, Awash International Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank.

3.4. Data Source and Collection

The researches has approach exclusively secondary sources of data, audited financial statements (Balance sheets and income statements), of six private commercial banks aged ten years and above been operating in the Ethiopian economy for the specified time period.

Though some of the sampled commercial banks have an experience of greater than ten years, the researcher has taken secondary data from their financial statements that belong or correspond to only the past ten consecutive years. On top of this, the data gathered is reliable in that it is collected from a supervisory bank, the National Bank of Ethiopia. Furthermore, selected explanatory attributes and used regression model have taken from most prominent and recent research studies in the area of capital structure.

3.5. Method of Data Analysis

Multiple regression model is employed to determine whether there exists a relationship between the multiple independent variables (Determinants = Profitability, Tangibility, Size, Growth, Age,) and the dependent variable (Leverage = Debt to Equity Ratio). One regression equation is used to test the hypotheses constructed in relation to firm-specific determinants (Profitability, Tangibility, Size, Growth, and Age) and the leverage (Debt-Equity Ratio). Data were regressed using E-view"8" application software and the resulted (or obtained) regression outputs are analyzed.

3.6. Model Specification

Most of the existing empirical studies on capital structure use linear regression techniques with proxies for the determinant factors used to explain the variation in leverage ratios across firms. The following multiple regression model is specified and used to test the relationship between the financial leverage and its determinate factors in the selected from private commercial banks.

General Form of the Equation is:

LEVERAGE = Function of (Profitability, Tangibility, Size, Growth, Age,)

Therefore, the Specified Model is:

$$\text{Leverage} = \beta_0 + \beta_1 (\text{Prof}) + \beta_2 (\text{Tang}) + \beta_3 (\text{Size}) + \beta_4 (\text{Grow}) + \beta_5 (\text{Age}) + \beta_6 (\text{Tax}) + \varepsilon$$

Whereas:

<u>STANDARD COEFFICIENTS AND ERROR TERM</u>			
β_0	= Coefficient of Intercept (Constant)	β_4	= Coefficient of Growth
β_1	= Coefficient of Profitability	β_5	= Coefficient of Age
β_2	= Coefficient of Tangibility	ε = the Error Term	
β_3	= Coefficient of Firm Size		

DEPENDENT VARIABLE

DER denotes leverage as a measure of Debt to Equity ratio and is computed as total Liabilities divided by total Stockholders' Equity

INDEPENDENT VARIABLES

Denotes profitability which is measured by using the ratio of operating income over total assets,

Denotes tangibility of assets which is measured by the ratio of fixed assets to total assets,

denotes size which is measured by the natural logarithm of total assets,

Denotes Growth which is measured by the percentage change of total assets,

Denotes Age which is measured by the number of years of stay in business operation

3.6. Definition and Measurement of Variables

In this study, the researcher has used one dependent variable (Leverage = Debt to Equity Ratio) and Five explanatory variables such as profitability, tangibility, size, growth, and age from most prominent and recent empirical studies. The selection measures for dependent variable (leverage, which is proxy to capital structure) and independent variables (firm-specific) are detailed as follows.

3.6.1. Dependent Variable (LEVERAGE)

Various measures of capital structure have been considered in the literature, however most studies use a measure of leverage that is a measure of the indebtedness of firms. There is no consensus on what measure of leverage should be used. A number of studies consider debt ratio as a measure of leverage (Shyam-Sunder and Myers (1999), Fama and French (2002) and Frank and Goyal (2002)). In the following previous studies such as Rajan and Zingales (1995), Booth et al. (2001) and Ashenafi (2005), the researcher considered one measure of leverage which is Debt to Equity Ratio. Debt to Equity ratio is, therefore, given by:

$$\text{DEBT TO EQUITY RATIO} = \frac{\text{Total liability}}{\text{Total shareholder's equity}}$$

3.6.2. Independent variables

I. Profitability

Profitability is a measure of earning power of a firm. The earning power of a firm is the basic concern of its shareholders. Profitability is measured in several accepted ways and in this study, profitability is measured ratio of operating income to total assets.

$$\text{PROFITABILITY} = \frac{\text{Operating Income}}{\text{Total Assets}}$$

II. Tangibility

Collateral value of assets, also known as Asset composition, are those assets that creditors can accept as security for issuing the debt. The tangibility of assets represents the effect of the collateral value of assets of a firm's gearing level (fixed) assets to total assets.

$$\text{TANGIBILITY} = \frac{\text{fixed asset}}{\text{Total Assets}}$$

III. Size

Size is the measure of how large the firm's operational capacity is. Various studies have used a number of measures to capture the size of firms. Titman and Wessels (1988) and Benito (2003)

Use the log of total assets to measure size. Similarly, this study also finds that the log of total assets to be an appropriate measure of size.

SIZE = Natural Logarithm of TOTAL ASSETS = \ln (Total Assets)

IV. Growth

Different studies have used varying measures of growth (investment opportunities). Titman and Wessels (1988, used annual percentage increase in total assets as a measure of growth. This study measures growth as a percentage increase in total assets of the private commercial banks every year.

$$\text{Growth} = \frac{\text{TA current year} - \text{TA previous year}}{\text{TA current year}}$$

V. Age

Reputation of the firms can be measured by the age of the firms. When a company exists longer in business (which is represented by variable age), it usually creates a reputation especially in the mind of creditors by fulfilling its payment obligations. This reputation was known in the market and makes it easier to get debt financing. Age is measured by the number of years each bank stays in business.

$$\text{AGE} = \text{Number of years in business}$$

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This chapter presents the results of data analysis. The chapter is organized as follows. Section 4.2 presents the descriptive analysis results while section 4.3 presents the regression analysis results.

4.2 Descriptive Statistics

Table 1 provides a summary of the descriptive statistics of the dependent and explanatory variables. The descriptive statistics of the dependent and explanatory variables for the sample banks were summarized in table 1. The total observation for each dependent and explanatory variable was 60. Moreover, the table also shows the mean, standard deviation, minimum, median and maximum values for the dependent and independent variables

Table 4.1: Summary of descriptive statistics for dependent and explanatory variable

Variables	LEV	PRO	TAG	AGE	BS	GRO
Mean	6.858678	0.028471	0.022084	1.113129	9.953658	-0.23188
Median	6.908909	0.029477	0.015754	1.146128	9.958256	-0.22442
Maximum	10.0844	0.040254	0.064181	1.342423	10.4812	-0.03548
Minimum	4.203865	0.003415	0.007293	0.60206	9.339054	-0.50492
Std. Dev.	1.713542	0.006713	0.013296	0.150081	0.269999	0.096663
Observations	60	60	60	60	60	60

Source: From Eview,8,

This shows the average indicators of variables computed from the financial statements.

The mean (median) leverage of banks was 6.858678 (6.908909). This means that more than 6.86 of the banks in Ethiopia are financed by debts. This highlights that debt ratio was high in this study. Leverage for the sample period was ranged from 4.203865 to 10.0844 with a standard deviation of 1.73542. Profitability, given as the ratio of pre-tax profits plus interest expense to total assets, registered a mean value of 0.022084 indicating a return on assets of 2.22 per cent and median of 2.9477 percent with a standard deviation of 0.6713 percent and profitability for the sample was ranged from 0.3415 percent to 8 percent. This shows 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 the mean (median) was -0.23188 (-0.22442). This indicates that, on average, growth rate was -23.188 per cent during the ten-year period and growth in total asset for sample period were ranged from – 50.492 percent to 3.548 percent with standard deviation of 9.6663 percent. This indicates the existence of high variation in growth rate among banks in Ethiopia. Size, determined as the natural logarithm of total assets had a mean (median) of 9.953658(9.958256) with a standard deviation of 0.269999. Natural logarithms of total asset for sample were ranged from 9.339054 to 10.4812 this implies that there is a variation among commercial banks of Ethiopia & private commercial banks in Ethiopia. Tangibility had a mean (median) of 0.022084 (0.015754 with the standard deviation of 0.150081 total asset for sample was ranged from 7.293 to 6.4181 this implies that there is a variation among commercial banks of Ethiopia & private commercial banks in Ethiopia Age is the number years in business charge on has a mean (median) of 1.113129 (1.146128) with standard deviation of 0.150081 with sample ranged from 0.60206 to 1.342423 percent.

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 profitability, tangibility, age. Which indicates that firm with higher leverage have less profitability, tangibility, age. However, size and growth have positive correlation with leverage. The result also shows that leverage was correlated at -0.40002 with age and had statistically significant correlation. Similarly, leverage was correlated at 0.125899 with growth

and had statistically significant correlation. Besides, leverage was correlated at -0.36075, -0.26923, 0.057043 with profitability, tangibility, and size respectively and had statistically insignificant correlation.

Table 1 **Table 4.2: Correlation matrix of dependent and independent variables**

Variables	LEV	PRO	TAG	AGE	BS	GRO
LEV	1					
PRO	-0.36075	1				
TAG	-0.26923	-0.09793	1			
AGE	-0.40002	-0.14065	0.599308	1		
BS	0.057043	-0.04387	0.541792	0.445807	1	
GRO	0.125899	0.168659	-0.21172	0.037398	0.233424	1

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

Different tests were run to make the data ready for analysis and to get reliable output from the research. These tests were intended to check whether the CLRM assumptions, i.e. the OLS assumptions, are fulfilled when the explanatory variables are regressed against the dependent variables. Accordingly, the following sub-section presents tests of CLRM.

4.3.1 Assumption one; Testing for the average value of the error-term is zero

The first CLRM assumption requires, the average value of the errors term should be zero. As per (Brooks, 2008), if a constant term is included in the regression equation, this assumption will not be violated. Therefore, since the constant term was included in the regression equation, this assumption will not be violated.

4.3.2 Test for normality:

The normality test for this study as shown as shown in figure the skwness is close to 0 and standard deviation 0.58 which is close to 1 implying that the data were consistent with a normal distribution assumption.

Figure 4.2: histogram showing normal distribution of data

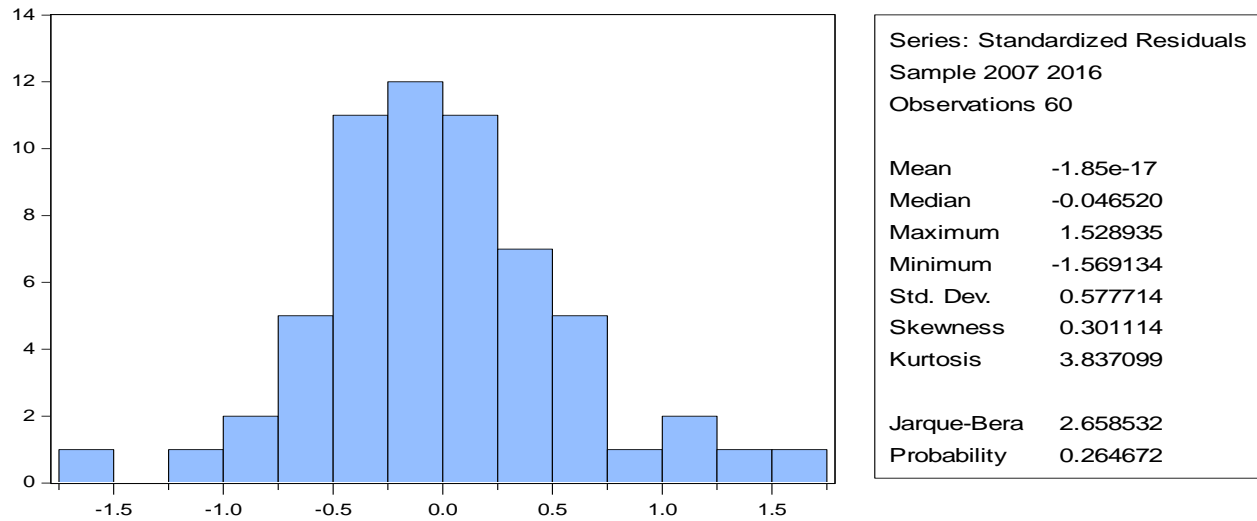


Figure 4.1 normality test for capital structure

4.3.3 Test of Multicollinearity

Multicollinearity means that there is linear relationship between explanatory variables which may cause the regression model biased Gujarati (2003). Multicollinearity can be identified by the variance inflation factor (VIF) technique, which is statistic calculated for each variable in the model. Theoretically, a VIF greater than 10 may suggest that the concerned variable is multicollinear with other in the model and may need to be excluded from the model. Hence, the VIF result in Table, as none of the VIFs is excessively high, suggest that there is no perfect or strong collinearity between the explanatory variables

Table 4.3 Correlation Matrix between independent variables

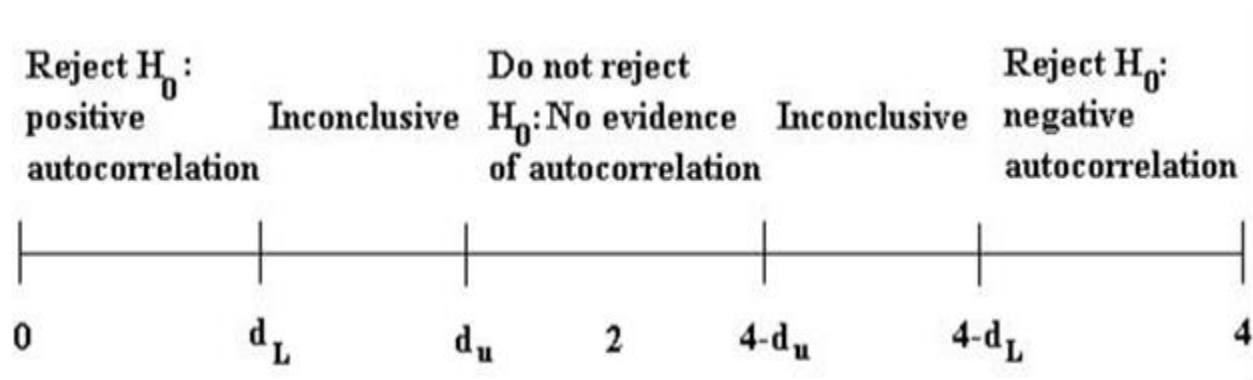
Variable	GRO	BS	TAG	PRO	AGE
GRO	1				
BS	0.23342	1			
TAG	-0.21172	0.54189	1		
PRO	0.16867	-0.04387	-0.09793	1	
AGE	0.03798	0.44581	0.59931	-0.14065	1

4.3.4 Test for Assumption of Autocorrelation

As noted in Brooks (2008) this is an assumption that the covariance between the error terms over time (or cross-section ally, 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.

Table 4.4 presents the Durbin-Watson test value for the autocorrelation of residual which is 1.125916. The relevant critical values for the test are $d_L = 1.248$, $d_U = 1.598$, and $4 - d_U = 4 - 1.598 = 2.402$; $4 - d_L = 4 - 1.248 = 2.752$. Accordingly, Durbin-Watson test value is clearly between the lower limit (d_L) which is 1.1.248 and the upper limit which is 1.598 and thus the null hypothesis is neither rejected nor not rejected.

Figure 4.2: Rejection and non-rejection regions for DW test



Source;Brooks(2008)

4.3.5. Test of Heteroscedasticity

Table 4.4 heteroscedasticity test for capital structure

Heteroskedasticity Test: White

F-statistic	11.113993	Prob. F(15,44)	0.3727
Obs*R-squared	16.51450	Prob. Chi-Square(15)	0.3487
Scaled explained SS	8.924156	Prob. Chi-Square(15)	0.8814

Table 4.4 presents three different types of tests for heteroscedasticity and then the auxiliary regression in the first results table displayed. The test statistics give us the information we need to determine whether the assumption of homoscedasticity is valid or not, but seeing the actual auxiliary regression in the second table can provide useful additional information on the source of the heteroscedasticity if any is found. In this case, both the F - and χ^2 versions of the test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p -values are considerably in excess of 0.05. The third version of the test statistic, ‘ Scaled explained SS’ , which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, similarly suggests in this case that there is no evidence of heteroscedasticity problem.

4.4 Random Effect versus Fixed Effect Models

The best alternative to make a choice between fixed effects and random effects model is conducting Hausman specification test. In this study the Hausman specification tests is utilized to decide which model is appropriate to fit the sample data. Hausman specification test is the classical test of whether the fixed or random effects model should have used.

If the P-value from the Hausman test is statistically significant (less than five percent) the fixed-effect model is preferred in favor of random effect, otherwise the random effect model is selected.

Table 4. 5 Correlated Random Effect-Hausman Test

Correlated Random Effects - Hausman Test
 Equation: Untitled
 Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	39.987176	5	0.0000

4.5. Discussions of regression results

The results of the multiple regression model between leverage (dependent variables) and the Five Explanatory variables are reported in Table 4.3.

Table 4.6: Firm specific analysis of determinant of capital structure

Dependent Variable: LEV
 Method: Panel Least Squares
 Date: 05/22/19 Time: 00:03
 Sample: 2007 2016
 Periods included: 10
 Cross-sections included: 6
 Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.205857	7.853167	-1.172248	0.2468
TAG	-36.54567	11.01288	-3.318449	0.0017
PRO	-53.73432	15.59283	-3.446092	0.0012
AGE	-8.573673	2.191015	-3.913106	0.0003
BS	2.855970	0.977633	2.921311	0.0053
GRO	2.079873	1.132822	1.836010	0.0724

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.886332	Mean dependent var	6.858678
Adjusted R-squared	0.863135	S.D. dependent var	1.713542
S.E. of regression	0.633930	Akaike info criterion	2.090385
Sum squared resid	19.69147	Schwarz criterion	2.474348
Log likelihood	-51.71154	Hannan-Quinn criter.	2.240574
F-statistic	38.20815	Durbin-Watson stat	1.125916
Prob(F-statistic)	0.000000		

Source: From E-views, 8,

The results indicate a negative relationship between profitability and leverage. The results, which are also consistent with previous studies (Frank and Goyal, 2009; Kibrom, 2010) show that higher profits increase the level of internal financing. 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. This finding is consistent with the pecking order theory that suggests that profitable firms prefer internal financing to external financing.

The results also indicate a statistically significant positive relationship between size and leverage. The results suggest that the bigger the bank, the more external funds it will use. One reason is that, larger banks are more diversified and hence have lower variance of earnings, enable them to manage high debt ratios. The providers of the debt capital are more willing to lend to larger banks as they are perceived to have lower risk levels. On the other hand, smaller banks may find it relatively more costly to resolve issues of information asymmetries with the providers of capital debt, thus, may present lower debt ratios. This result supports financial theory and is consistent with the empirical evidence.

The results show a positive relation between growths on the one hand and leverage on the other hand this finding also supported by Ross, et al (2008) Growing firms place a greater demand on the internally generated funds of the firm It means pecking order theory indicates the positive relationship between growth and leverage. Consequently, banks with a relatively high growth rate will tend to look at short-term less secured debt first then to longer-term more secured debt to finance their growth.

Although, the results on Table 4.3 show a negative relation between Tangibility and leverage. For Tangibility, in this study, the sign of tangibility variable coefficient is found to be negative and statistically significant.

.The negative and statistically significant influence of age in this study was consistent with a theoretical analysis of pecking order which state that high age firms use internal resources instead of external to finance their projects. Therefore, this negative effect of age on leverage was also largely consistent with the empirical evidence of Deesomsak et al. (2004), Ahmed et al., (2010), and Najjar and Petrov (2011).

Table 4.7 Summary of actual and expected signs of explanatory variables on the dependent variables

Explanatory Variables	Expected Sign	Actual Sign	Significance	Decision on Hypothesis
Profitability	-	-	significant	Accept
Growth	+	+	Insignificant	Reject
Bank size	+	+	significant	Accept
Age	+	-	significant	Accept
Tangibility	+	-	significant	Accept

Source: Own design from E-view result.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5. Introduction

This chapter presents the summary of the study in section 5.2, conclusion in section 5.3, recommendations for policy in section 5.4.

5.1 Summary of findings

The objective of this study was to find out the determinants of capital structure of private commercial banks in Ethiopia. The study used inferential research design to find out the relationship between independent variables and dependent variables of the study. The population of this study was all the 16 private commercial banks in Ethiopia currently licensed by the National Bank of Ethiopia to operate among sixteen the researcher took six that generates financial statement from 2007 onwards. Secondary data was drawn from the financial statements of National banks of Ethiopia from 2007-2016. The data was analyzed using descriptive analysis and multiple regression analysis.

5.2 Conclusion

This study examines the determinants of capital structure of Ethiopian Private commercial banks in Ethiopia. In contrast to early studies, the main focus is on private banks because government own banks like Ethiopian commercial bank their contribution to the GDP is four times larger than all private commercial banks in Ethiopia. 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.

From the descriptive statistic the average (mean) debt to equity ratio (DER) of the sampled commercial banks is found to be 6.858678 signifying the banks in Ethiopia are financed by debts. That is, the banks' financing decision is inclining to deposit (or debt) mobilization than to the equity financing.

In light of the above, the main objective of this study was to examine the relationship between leverage and firm specific (profitability, Size, growth, tangibility, and age) determinants of capital structure decision, and to understand about theories of capital structure that can explain

the capital structure of private commercial banks in Ethiopian. To achieve the intended objective the study used inferential research design. The collected data were analyzed by employing OLS model by using E-view ‘ 8’ .

From the analysis the data analyzed for this study. As can be seen in the table above, the model estimated gives the following result. The estimated model above has an R² and Adjusted R² 88.6332% and 86.3145% respectively as its coefficient of variation. This indicates that the variations or changes in the capital structure of the understudied bank in Ethiopia not only determined by the dependent variables selected for this study. This is further supported by the F-Statistic which is given at 38.20815 and significant at 1% level of significance from the F-Statistic Prob. This shows that the coefficients of the variables in our model are statistically different from zero. The Durbin-Watson Statistic estimated at 1.125926 indicates that there is no trace of serial correlation in the error terms of our model which may render it a spurious regression.

5.3 Recommendation

From the finding the researcher obtains result based on that the under listed recommendation suggested:

The study recommends that through this study, it is hoped that major players such as bank managers, financial analysts and policy maker will have better understanding about the factors which may influence the capital structure of the Ethiopian banking sector and enhance competitiveness in the banking sector. Therefore, banks should pay greater attention to these significant variables in determining their capital structure this analyses indicated that the variables of profitability tangibility, growth size, and age were significantly related to leverage ratio. The analysis R² gives a result of 88.6332% this implies that the variable which studied not give optimal determinant of capital structure so banks must research other than the studied variables in order to optimize the determinant of capital structure.

5.3. Recommendations for future studies

This study examined only 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 inflation, GDP, interest rate and ownership structure, in order to demonstrate the impact of both internal and external variables on the choice of capital structure.

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Appendix

Appendix II- Heteroscedasticity test of capital structure

Heteroskedasticity Test: White

F-statistic	1.113993	Prob. F(15,44)	0.3727
Obs*R-squared	16.51450	Prob. Chi-Square(15)	0.3487
Scaled explained SS	8.924156	Prob. Chi-Square(15)	0.8814

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/05/19 Time: 10:29

Sample: 1 60

Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.63637	9.710775	1.507230	0.1389
PRO^2	-4716.512	3943.558	-1.196004	0.2381
PRO*TAG	5678.304	5394.432	1.052623	0.2983
PRO*AGE	-291.1844	654.0242	-0.445220	0.6583
PRO*BS	38.56612	74.77219	0.515782	0.6086
PRO*GRO	-489.4506	546.0443	-0.896357	0.3749
TAG^2	0.253024	2143.462	0.000118	0.9999
TAG*AGE	-182.1027	474.6444	-0.383661	0.7031
TAG*BS	-4.474528	57.92524	-0.077247	0.9388
TAG*GRO	-523.5544	306.1914	-1.709892	0.0943
AGE^2	-1.414743	17.37564	-0.081421	0.9355
AGE*BS	2.310455	4.855659	0.475827	0.6366
AGE*GRO	22.91646	46.68897	0.490832	0.6260
BS^2	-0.328939	0.319181	-1.030573	0.3084
BS*GRO	-0.485485	5.782988	-0.083951	0.9335
GRO^2	-16.48232	22.97229	-0.717487	0.4769

R-squared	0.275242	Mean dependent var	1.601148
Adjusted R-squared	0.028165	S.D. dependent var	1.831198
S.E. of regression	1.805226	Akaike info criterion	4.242427
Sum squared resid	143.3891	Schwarz criterion	4.800919
Log likelihood	-111.2728	Hannan-Quinn criter.	4.460884
F-statistic	1.113993	Durbin-Watson stat	1.351858
Prob(F-statistic)	0.372693		

Appendix I: Hausman Test of capital structure

Correlated Random Effects - Hausman Test

Equation: Untitled

Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	39.987176	5	0.0000

** WARNING: estimated period random effects variance is zero.

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
PRO	-155.548342	-115.864331	149.492940	0.0012
GRO	2.243946	2.002507	1.424749	0.8397
BS	7.902565	2.074032	1.188998	0.0000
AGE	-1.711152	-5.950980	1.017415	0.0000
TAG	1.935220	-19.903956	66.566181	0.0074

Period random effects test equation:

Dependent Variable: LEV

Method: Panel Least Squares

Date: 06/21/19 Time: 15:43

Sample: 2007 2016

Periods included: 10

Cross-sections included: 6

Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-64.98984	13.62433	-4.770131	0.0000
PRO	-155.5483	24.34777	-6.388607	0.0000
GRO	2.243946	2.038974	1.100527	0.2770
BS	7.902565	1.281532	6.166499	0.0000
AGE	-1.711152	1.558227	-1.098140	0.2780
TAG	1.935220	17.53218	0.110381	0.9126

Effects Specification

Period fixed (dummy variables)

R-squared	0.710176	Mean dependent var	6.858678
Adjusted R-squared	0.620008	S.D. dependent var	1.713542
S.E. of regression	1.056287	Akaike info criterion	3.159714
Sum squared resid	50.20836	Schwarz criterion	3.683300
Log likelihood	-79.79142	Hannan-Quinn criter.	3.364517
F-statistic	7.876183	Durbin-Watson stat	0.747732
Prob(F-statistic)	0.000000		

Appendix III; Ratio Data of capital structure

BANKS	YEARS	AIB	PRO	TAG	AGE	BS	GRO
AIB	2007	7.824885	0.037337	0.02611	1.113943	9.583142	-0.2584
AIB	2008	7.073702	0.029668	0.027178	1.146128	9.683067	-0.3325
AIB	2009	7.502667	0.022264	0.022887	1.176091	9.853236	-0.2369
AIB	2010	7.32234	0.031215	0.028571	1.20412	9.95535	-0.2732
AIB	2011	6.601895	0.035686	0.025448	1.230449	10.0449	-0.1800
AIB	2012	6.304047	0.033007	0.027399	1.255273	10.11811	-0.2447
AIB	2013	6.896569	0.034188	0.032034	1.278754	10.25004	-0.3479
AIB	2014	6.820234	0.030856	0.031784	1.30103	10.34453	-0.1917
AIB	2015	6.624175	0.027036	0.037974	1.322219	10.40158	-0.2406
AIB	2016	6.664843	0.025119	0.039291	1.342423	10.4812	-0.4176
BOA	2007	7.426799	0.019729	0.012073	1.041393	9.530929	-0.2573
BOA	2008	9.174276	0.003415	0.015451	1.079181	9.630382	-0.2826
BOA	2009	9.54758	0.018343	0.014176	1.113943	9.738513	-0.1466
BOA	2010	9.735043	0.022452	0.012199	1.146128	9.797928	-0.1589
BOA	2011	10.01059	0.024869	0.011892	1.176091	9.861986	-0.1321
BOA	2012	8.084895	0.026214	0.011597	1.20412	9.915913	-0.2292
BOA	2013	8.141697	0.021325	0.026105	1.230449	10.0069	-0.1132
BOA	2014	6.374755	0.039642	0.043199	1.255273	10.05217	-0.2120
BOA	2015	6.548839	0.021345	0.063971	1.278754	10.13569	-0.2312
BOA	2016	6.921249	0.021427	0.064181	1.30103	10.2341	-0.5049
DB	2007	10.0844	0.030955	0.016057	0.60206	9.781109	-0.2959
DB	2008	9.709986	0.030528	0.011987	0.69897	9.893706	-0.2432
DB	2009	9.707371	0.025686	0.011276	0.778151	9.988228	-0.2692
DB	2010	9.996911	0.026231	0.013347	0.845098	10.09179	-0.1867
DB	2011	9.498274	0.030741	0.013242	0.90309	10.16611	-0.1951
DB	2012	8.584844	0.037216	0.014958	0.954243	10.24354	-0.1271
DB	2013	8.653014	0.030728	0.014958	1	10.29551	-0.1121
DB	2014	7.454739	0.032441	0.027271	1.041393	10.34168	-0.1275
DB	2015	7.469498	0.029443	0.027562	1.079181	10.39382	-0.1539
DB	2016	7.510386	0.025442	0.027977	1.113943	10.4001	-0.2116
NIB	2007	5.134118	0.029152	0.01611	0.90309	9.416141	-0.4008
NIB	2008	5.103679	0.030959	0.011781	0.954243	9.562305	-0.3169
NIB	2009	5.593964	0.032037	0.01165	1	9.681829	-0.2421
NIB	2010	5.51145	0.033663	0.012058	1.041393	9.776011	-0.1910
NIB	2011	5.073442	0.034589	0.010546	1.079181	9.851973	-0.1636
NIB	2012	4.41623	0.034558	0.0116	1.113943	9.917805	-0.105
NIB	2013	4.489196	0.032695	0.013559	1.146128	9.961162	-0.1752
NIB	2014	4.472138	0.027635	0.020376	1.176091	10.0313	-0.2334
NIB	2015	5.089169	0.025422	0.023025	1.20412	10.12242	-0.1941
NIB	2016	5.286886	0.024636	0.024859	1.230449	10.21453	-0.3278

UB	2007	5.063889	0.029317	0.014659	0.954243	9.339054	-0.4887
UB	2008	5.944444	0.028	0.010462	1	9.511909	-0.4313
UB	2009	7.946154	0.020206	0.009028	1.041393	9.667671	-0.2674
UB	2010	8.241379	0.029512	0.007293	1.079181	9.770574	-0.3103
UB	2011	7.574917	0.030028	0.007637	1.113943	9.887923	-0.1373
UB	2012	6.973684	0.033914	0.011153	1.146128	9.943833	-0.1355
UB	2013	7.308077	0.021447	0.01343	1.176091	9.999029	-0.1902
UB	2014	6.53926	0.016694	0.019011	1.20412	10.07468	-0.2091
UB	2015	7.516504	0.019589	0.024998	1.230449	10.15718	0.20256
UB	2016	7.332909	0.019631	0.028279	1.255273	10.24682	-0.2659
WB	2007	7.635236	0.032184	0.009483	1	9.541517	-0.1853
WB	2008	5.818182	0.033697	0.009939	1.041393	9.615411	-0.2407
WB	2009	5.12201	0.035365	0.011333	1.079181	9.709126	-0.1219
WB	2010	4.458175	0.038837	0.014455	1.113943	9.759058	-0.4038
WB	2011	5.02917	0.040069	0.01439	1.146128	9.906385	-0.0354
WB	2012	4.203865	0.040254	0.03703	1.176091	9.921538	-0.2452
WB	2013	4.679781	0.033	0.034732	1.20412	10.01677	-0.0816
WB	2014	4.243227	0.027129	0.047515	1.230449	10.06176	-0.2195
WB	2015	4.679063	0.02628	0.046751	1.255273	10.13708	-0.1807
WB	2016	4.769953	0.023202	0.045738	1.278754	10.20144	-0.2940