Addis Ababa University

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The impact of capital structure on profitability of Commercial Banks in Ethiopia

A Thesis Presented in Partial Fulfillment of the Requirements for the Degree of Master of Science (Accounting and Finance)

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This is to certify that the thesis prepared by Aragaw Hailu, entitled: *The impact of capital structure on profitability of Commercial Banks in Ethiopia* and submitted in partial fulfillment of the requirements for the Degree of Master of Science (Accounting and Finance) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Statement of declaration

I declare that the thesis entitled: *The impact of capital structure on profitability of Commercial Banks in Ethiopia*, hereby submitted by me in partial fulfillment of the requirements for the Degree of Master of Science (Accounting and Finance) at the University of Addis Ababa, is my original work and has not been submitted for any degree in any other university. I have undertaken it independently with the advice of my advisor, Abebaw Kassie (PhD). In performing the thesis I have used different sources and material which have been acknowledged.

Name: Aragaw Hailu Mengesha

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June 2015

Statement of certification

This is to certify that Aragaw Hailu Mengesha has carried out his research work on the topic entitled "*The impact of capital structure on profitability of Commercial Banks in Ethiopia*". The work is original in nature and is suitable for submission for the award of the M.Sc. Degree in Accounting and Finance.

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Abstract

The choice of capital structure is one of the most important strategic financial decisions of firms. Since financing decisions influence profitability and hence firm's value, this study examines the impact of capital structure on profitability of core business operations of commercial banks in Ethiopia. In order to meet the objectives of this study a quantitative panel data methodology was employed. The panel data were obtained from the audited financial statements of eight commercial banks and National Bank of Ethiopia for the period of twelve years (2001/02 – 2012/13). The panel data fixed effect estimation model was applied for the data analysis through EViews 8.1 statistical package. It was observed that 89% of the total capital of commercial banks in Ethiopia in the period under study was made up of debt. Of this, 75% constitute deposit and the remaining was non-deposit liabilities. This has reaffirmed the fact that banks are highly levered institutions. The findings revealed that capital structure as measured by total debt to asset had statistically significant negative impact, whereas deposit to asset had statistically significant positive impact on profitability of core business operations of commercial banks. Moreover, loan to deposit, spread and asset size also had statistically significant and positive relationship with profitability. However, growth found to have statistically insignificant impact on profitability. Therefore, banks should give due consideration to manage their debts properly, mobilize deposit sufficiently, increase loan advances, spread, and size in their financing decisions. Furthermore, banks also advised to reduce non-deposit debt financing and raise equity financing so that to keep costs of financing at minimum level and hence optimize profitability and the value of banks. Besides, the policy maker, National Bank of Ethiopia also recommended reconsidering to raise the minimum capital requirement for banks. Finally, future researchers also recommended assessing the overall performance of banks and other business sectors in the area of this research.

Key words: *Banks, Capital structure, Profitability, core business operation, and panel data.*

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List of Acronyms & Abbreviations

AIB - Awash international bank

BOA - Bank of Abyssinia

CBB - Construction and business bank

CBE - Commercial bank of Ethiopia

CLRM - Classical Linear Regression Model

DB - Dashen bank

NBE - National Bank of Ethiopia

NIB - Nib international bank

UB - United bank (UB)

WB - Wegagen bank

Chapter1: Introduction

One of the major objectives of a firm is to maximize the wealth of owners or shareholders of the firm. The wealth of shareholders' in turn is defined as the current price of the firm's outstanding shares. 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).

Capital structure refers to several alternatives that could be adopted by a firm to get the necessary funds for its investing activities in a way that is consistent with its priorities. Most of the effort of the financial decision making process is centered on the determination of the optimal capital structure; where the cost of capital is minimized and firms' value is maximized. Capital structure theory suggests that firms determine what is often referred to as a target debt ratio; which is based on various trade-off between the costs and benefits of debt versus equity. The theory of capital structure was first established by Modigliani and Miller in 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.

The trade- off theory 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 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 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. On the other hand, the capital structure of banks is still a relatively under-explored area in the banking literature. Currently, there is no clear understanding on how banks choose their capital structure and what factors influence their corporate financing behavior (Amidu, 2007). Likewise the relationship between capital structure and profitability is one that received considerable attention in finance literature. However, in the context of banking industry, the subject has received a limited research attention (Taani, 2013).

In Ethiopia, there are a few studies in relation to determinants of capital structure and determinants of profitability distinctly studied by deferent researchers such as, Ashenafi (2005) a case study in Addis Ababa Small and Medium enterprises, Amanuel (2011) evidence from manufacturing share companies of Addis Ababa city, and Bayeh (2011) evidence from Ethiopian insurance company. In addition, Weldemikael (2012) studied on determinants of capital structure of Commercial Banks in Ethiopia and Amdemikael (2012) also assessed factors affecting profitability of banks. But, no one was emphasized on the core business profitability of banks. Hence, as to the knowledge of the researcher there were no studies related to this title "The Impact of Capital Structure on Profitability of Commercial Banks in Ethiopia" with an emphasis on the profitability of core business operations of commercial banks in the country.

Therefore, given the unique features of banks' financial structure and the environment in which they operate, there are strong grounds for a separate study on the impact of capital structure on profitability of banks in Ethiopia with due focus on the profitability of core business operations of commercial banks.

Hence, the aim of this study was to examine the impact of financing decision /capital structure on profitability of commercial banks in Ethiopia with an emphasis on core business operations profitability. This will equip financial managers with applied knowledge of the potential problems in profitability and capital structure, as well as determining their optimal level of capital structure to achieve optimum level of firm's profitability and hence shareholders' wealth.

The next parts of this chapter are organized as follows. Section 1.1 and 1.2 presents the statement of the problem and the objectives of the study respectively. Section 1.3 presented the research hypothesis of the study followed by section 1.4 which states about the scope & limitation of the study. Besides, section 1.5 presents the significance of the study and the last section 1.6 presents organization of the study.

1.1 Statement of the problem

The choice of capital structure is one of the most important strategic financial decisions of firms. However, it has been the subject of substantial debate and investigation. The debate on what drives capital structure decisions and its impact on profitability is still open. Since the seminal work of Modigliani and Miller (1958), a number of theoretical literatures which led to the formulation of alternative theories were developed, such as the static trade off theory, pecking order theory and agency cost theory. These theories states about a number of specific factors that may affect the capital structure and profitability of firms such as size, tangibility, growth, risk, liquidity, age, and dividend payout, as well as how the capital structure or financing decision affect the value of firms.

However, the empirical evidence regarding the alternative theories is still debatable (Rajan & Zingales, 1995). For instance, static trade off-theory states that a firm's optimal debt ratio is determined by a trade-off between the tax advantage and

bankruptcy cost of borrowing, holding the firm's assets and investment plans constant. This theory assumes that higher profitability lower the expected cost of distress; hence, firms increase their leverage to take advantage from tax benefits. That is, profitability is positively related with leverage. Due to the free cash flow theory of Jensen (1986) agency cost theory also supports this positive relation. However, the pecking order theory of Myers & Majluf (1984) suggests that firms use debt only when the internal financing is not available and argues against the existence of target capital structure. According to this theory profitability is expected to have negative relation with leverage.

The determinants of capital structure and firm value have been contested for many years and still represent one of the most unresolved issues in corporate finance literature. Only a few of the developed theories have been tested by empirical studies and the theories themselves lead to different, not mutually exclusive and sometimes opposed result and conclusion (Rajan & Zingales,1995). Morri & Beretta (2008) explained that numerous theoretical studies and much empirical research have addressed those issues, but there is no a fully supported and generally accepted theory; and the debate on the significance of determinant factors of capital structure and profitability/ firm value is still open.

Moreover, although earlier studies have great contributions to the theory of capital structure and profitability, they were limited to developed financial system and restricted to non-banks. Less developed countries like, Ethiopia, received little attention in the literature. According to Octavia & Brown (2008), the capital structure of banks are still a relatively under-explored area in the banking literature and the special nature of the deposit contract, the degree of leverage in banking and the regulatory constraints imposed on banks have meant that banks (and financial institutions in general) have been excluded in previous empirical studies on standard capital structure choice. However, understanding the determinants of capital structure and profitability as well as the impact of financing decision or capital structure on profitability is as important for banks as for non-banks firms. According to Amidu

(2007) currently, there is no clear understanding on how banks choose their capital structure and what factors influence their corporate financing behavior. Likewise the relationship between capital structure and profitability is one that received considerable attention in the finance literature. However, in the context of banking industry, the subject has received a limited research attention (Taani, 2013).

In the contexts of Ethiopia, there are a few studies in relation to determinants of capital structure and determinants of profitability distinctly studied by deferent researchers. For example, Ashenafi (2005) managed a case study in Addis Ababa Small and Medium enterprises, whereas Amanuel (2011) wrote using evidence from manufacturing share companies of Addis Ababa city. In addition, Bayeh (2011) assessed using evidence from Ethiopian insurance companies. Moreover, in the banking industry of the country, Weldemikael (2012) studied on determinants of capital structure of Commercial Banks in Ethiopia while Amdemikael (2012) assessed factors affecting profitability of banks with a focus on overall performance. However, no one was emphasized on the core business operations profitability of banks. For the purpose of this study core business operations of commercial banks was defined as 'the banks' operations of deposit mobilization and providing loans to customers'.

Besides, apart from some studies made outside Ethiopia, most of these studies attempted to test the determinants of capital structure and factors affecting profitability using comprehensive measures of profitability return on asset (ROA) and return on equity (ROE) as well as debt to total asset and capital adequacy as measure of leverage. Hence, didn't take into account other measures of profitability particularly the ***measure of profitability for core business operations of banking sector, net interest margin (NIM)***. In addition, in relation to explanatory variables past studies failed to investigate the impact of the ***main source of banks' external finance, deposit*** and other factors such as loan to deposit, spread and growth of banks which believed to have great contribution to the core business operations of banks.

As to the knowledge of the researcher there were no studies related to this title "The Impact of Capital Structure on Profitability of Commercial Banks in Ethiopia" with an emphasis on the core business operations profitability of commercial banks in the country.

Knowledge of the impact of financing decision or capital structure on profitability of banks would help financial managers to predict and mitigate potential problems associated with their financing decision. Particularly, acquiring knowledge of the impact of capital structure on profitability of banks' core business operations will have significant benefit to manage financing decision in a way that meets the goal of firms; shareholders' wealth maximization.

Therefore, given the unique features of banks' financial structure and the environment in which they operate, there are strong grounds for a separate study on the impact of capital structure on profitability of commercial banks in Ethiopia by emphasizing on banks' core business operations profitability.

Hence, the aim of this study was to examine the impact of leverage/capital structure on profitability of commercial banks in Ethiopia with an emphasis on banks' core business operations as it was defined as the banks' operations of deposit mobilization and providing loans to customers. The result intends to equip financial managers with applied knowledge of the potential problems in profitability and capital structure, as well as determining their optimal level of capital structure to achieve optimum level of firm's profitability so that to meet wealth maximization goal of firms. Furthermore, it intends to serve as a base for policy makers in considering the minimum capital requirement of banks operating in the country.

1.2 Objectives

The general objective of this study was to examine the impact of capital structure on profitability of commercial banks listed in the National Bank of Ethiopia, with an emphasis on performance of core business operations of banks.

The specific objectives of this study are:

- To investigate the relationship between capital structure variables and profitability of core business operation of commercial banks in Ethiopia.
- To examine the impact of financing decision or capital structure on profitability of core business operation of commercial banks in Ethiopia.

1.3 Research Hypothesis

To achieve the objectives of this study the following hypotheses were tested.

H1: There is no significant relationship between capital structure proxied by Total Debt to Asset and profitability of core business operations of commercial banks in Ethiopia.

H2: There is no significant relationship between capital structure proxied by Deposit to Asset and profitability of core business operations of commercial banks in Ethiopia.

H3: There is no significant relationship between Loan to Deposit and profitability of core business operations of commercial banks in Ethiopia.

H4: There is no significant relationship between Spread and profitability of core business operations of commercial banks in Ethiopia.

H5: There is no significant relationship between growth and profitability of core business operations of commercial banks in Ethiopia.

H6: There is no significant relationship between Asset size and profitability of core business operations of commercial banks in Ethiopia.

1.4 Scope and limitation of the study

The scope of this study was limited to the examination of the impact of capital structure on profitability of core business operations of commercial banks in Ethiopia over the period of 12 years (2001/02 to 2012/13). In order to make generalization from sample to population, and to increase number of observation of the study, a combination of the maximum number of banks and years in which audited financial statements available were taken into account. As a result, the researcher achieved 96 number of observation by taking sample of the only 8 Commercial Banks that have been operating and provided audited financial statements during the period of 2001/02 to 2012/13. To meet its objectives, the study was limited to examining the impact of capital structure on profitability of core business operation of banks using independent variables: Total Debt to Asset, Deposit to asset, Loan to deposit, Spread, growth, and Asset size, and the dependent variable was Net interest margin (as a measure of profitability of core business operations of banks). The major limitation that hinder the study were absence of active secondary market which forced the researcher to measure the dependent variable as well as the proxies of the independent variables in terms of book values rather than market values.

1.5 Significance of the study

This study have significant role to play in filling gap in understanding of the impact of capital structure decisions on profitability of core business operations of banks in Ethiopia. And hence will serve as reference for financial managers to equip them with

applied knowledge of the potential problems in financing decisions / capital structure and profitability, as well as determining their optimal level of capital structure to achieve optimum level of firm's profitability so that to meet wealth maximization goal of firms. In addition, it will serve as a base for policy makers such as National Bank of Ethiopia to look at the appropriate level of capital requirement for banks. Besides, it will also serve as a reference for other researchers in the area of corporate finance.

1.6 Organization of the study

This thesis is organized into five chapters. Chapter one presents research introduction, statement of the problem, objective of the study, 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 capital structure and profitability. Chapter three presents the research methodology. Then, chapter four present the results and discussion of the study and finally, chapter five present conclusions and possible recommendations.

Chapter 2: Review of related literature

The literature review section of the study cover the overview of the Ethiopian banking system and capital requirement, the theoretical and empirical studies review in the areas of capital structure and profitability. Moreover, it presents the variable summary and conceptual framework as well as the knowledge gap and conclusion.

2.1 Overview of the Ethiopian banking system and capital requirement

Banking system in Ethiopia was started in 1905 with the establishment of Abyssinian Bank. Its establishment was based on a fifty year agreement with the Anglo-Egyptian National Bank. A new development bank and two other foreign banks were also established in 1908 (Degefe, 1995 cited in Geda, 2006). However, in 1931 the Ethiopian government purchased the Abyssinian Bank and renamed it as the Bank of Ethiopia.

As stated in Degefe (1995) cited in Geda (2006), banking activity of the country was relatively expanded during the five-years of Italian occupation. During that time, the Italian banks were particularly active. As a result, most of the banks operating during this period were Italian banks. After independence from Italy's occupation, due to the paramount role of British in its strategic planning during the Second World War, Barclays Bank was established and it remained in operation in Ethiopia in the period of 1941 to 1943.

The State Bank of Ethiopia was established in 1943. However, Britain was against it, as a result, the process of the establishment of this bank was painful. Until 1963 the Bank of Ethiopia was operating as both a commercial and central bank. In 1963 it

was remodeled into today's National Bank of Ethiopia (NBE). It was also re-established in 1976 and the Commercial Bank of Ethiopia (CBE) too. It was after this period many other banks were established and those banks were in operation before the 1974 revolution. Nevertheless, all privately owned financial institutions including three commercial banks, thirteen insurance companies, and two non-bank financial intermediaries were nationalized on 1 January 1975. The nationalized banks were reorganized and one commercial bank Ethiopia (CBE), a national bank, two specialized banks, that is, the Agricultural and Industrial Bank, renamed recently as the Development Bank of Ethiopia and a Housing and Saving Bank, renamed lately as the Construction and Business Bank (CBB), and one insurance company (the Ethiopian Insurance Company) were formed (Degefe 1995 cited in Geda 2006).

Following the downfall of the Dergue regime in 1991 and the 1992 liberalization policy, these financial institutions were reorganized to operate in a market-oriented policy framework. Furthermore, private financial institutions were also allowed to operate alongside the publicly owned institutions. As a result, currently, the major financial institutions operating in Ethiopia are banks, insurance companies and micro-finance institutions. The number of banks operating in the country reached 19 of which 16 are private, and the remaining 3 are state-owned (NBE, 2013/14).

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

In relation to banks capital requirement, the Ecobank December 31, 2014 report states that the move will help to boost the financial stability of the Ethiopian banking sector and reposition several undercapitalized private sector banks to play enhanced roles and slightly reduce the current concentration in the sector. Furthermore, it is expected that seven private sector banks that are yet to meet the new minimum capital requirement to collectively raise equity capital of about Birr 1.29 billion (USD63.54mn) over the next 18 months. However, while this exercise led to banking sector consolidation in countries such as Nigeria, will not expect this to happen in Ethiopia as the seven private banks could meet the minimum capital requirement prior to the June 2016 deadline (Ecobank, 2014).

According to Ecobank (2014) while Ethiopia's new minimum capital requirement is higher than that of East African neighbors such as Kenya, Tanzania, and Uganda, it is lower than the minimum capital requirement for banks in Ghana, Zambia (foreign banks), and Nigeria.

2.2 Theoretical Review

This theoretical review part of the study is all about the review of the theories of capital structure and profitability or firm value.

2.2.1 Theory of Capital Structure and profitability/ value of a firm

Ross (2003) states that a corporation can raise money (cash) from lenders or from shareholders. If it borrows, the lenders contribute the cash, and the corporation promises to pay back the debt plus a fixed rate of interest. If the shareholders put up the cash, they get no fixed return, but they hold shares of stock and therefore get a

fraction of future profits and cash flow. The shareholders are equity investors, who contribute equity financing. The choice between debt and equity financing is called the capital structure decision. Capital refers to the firm's sources of long-term financing.

Corporations raise equity financing in two ways. First, they can issue new shares of stock. The investors who buy the new shares put up cash in exchange for a fraction of the corporation's future cash flow and profits. Second, the corporation can take the cash flow generated by its existing assets and reinvest the cash in new assets. In this case the corporation is reinvesting on behalf of existing stockholders. No new shares are issued.

What happens when a corporation does not reinvest all of the cash flow generated by its existing assets? It may hold the cash in reserve for future investment, or it may pay the cash back to its shareholders.

Business is inherently risky. The financial manager needs to identify the risks and make sure they are managed properly. For example, debt has its advantages, but too much debt can land the company in bankruptcy (Brealey, Myers, & Allen, 2011)

Financing arrangements determine how the value of the firm is sliced up. The firm can determine its capital structure. That is, the firm might initially have raised the cash to invest in its assets by issuing more debt than equity; now it can consider changing that mix by issuing more equity and using the proceeds to buy back some of its debt. Financing decisions like this can be made independently of the original investment decisions. The decisions to issue debt and equity affect how the pie is sliced (Ross, 2003).

A number of theories have been advanced in explaining the capital structure and profitability / value of firms. The existing theories of capital structures and profitability/ firm value are explained as follows.

2.2.1.1 Modigliani and Miller (MM) theory

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

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

2.2.1.2. Static Trade-off Theory

Capital structure theories have diverse 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). It states also that firms seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress. Apart from the tax advantage of debt, agency and bankruptcy costs may encourage highly profitable firms to have more debt in their capital structure. This is because highly profitable firms are less

likely to be subject to bankruptcy risk because of their increased ability to meet debt repayment obligations. Thus, they will demand more debt to maximize their tax shield at more attractive costs of debt. For these considerations, the trade-off theory predicts a positive relationship between leverage and profitability.

2.2.1.3. Pecking order theory

The pecking order theory of Myers & Majluf (1984) argues in the contrary of static trade-off theory. It advocates also that the firm will borrow, rather than issuing equity, when internal cash flow is not sufficient to fund capital expenditures. Thus the amount of debt will reflect the firm's cumulative need for external funds. It concludes a negative association between leverage and profitability because high profitable firms will be able to generate more capitals through retained earnings and then have less leverage. Therefore, it is expected that there is negative relationship between leverage and profitability ratio.

2.2.1.4. Agency cost theory

Agency theory focused on the costs which are created due to conflicts of interest between shareholders, managers and debt holders. Harris & Raviv (1991) explained the three types of agency costs which can help explain the relevance of capital structure as follows;

Asset substitution effect: As D/E increases, management has an increased incentive to undertake risky (even negative NPV) projects. This is because if the project is successful, shareholders get all the upside, whereas if it is unsuccessful, debt holders get all the downside. If the projects are undertaken, there is a chance of firm value decreasing and a wealth transfer from debt holders to shareholders.

Underinvestment problem: If debt is risky (e.g. in a growth company), the gain from the project will accrue to debt holders rather than shareholders. Thus, management has an incentive to reject positive NPV projects, even though they have the potential to increase firm value.

Free cash flow: unless free cash flow is given back to investors, management has an incentive to destroy firm value through empire building and perks etc. Increasing leverage imposes financial discipline. The free cash flow theory says that dangerously high debt levels will increase value, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable investment opportunities. The free cash flow theory is designed for mature firms that are prone to overinvest. Due to the free cash flow theory of Jensen (1986) agency cost theory supports a positive relationship between capital structure and profitability.

2.3 Empirical studies on the impact of capital structure on profitability

Over the past several decades' corporate finance researchers have devoted considerable efforts to transform rationalism of capital structure into empiricism. The problem of developing a conclusive theory of capital structure and designing empirical tests those are powerful enough to provide a basis for choosing among the various theories is still unresolved. The literature on the relationship between firm performance and capital structure has produced mixed results (Taani, 2013). Hence, the relationship between capital structure and firm value has been the subject of considerable debate. Apart from the seminal work of Modigliani and Miller (1958) emphasizing on the irrelevance theory of capital structure and their subsequent revision taking in to account the tax benefit of debt financing Modigliani and Miller (1963), as well as succeeding arguments and researches such as Static Trade-off Theory of Myers (1984) and pecking order theory of Myers & Majluf (1984) which argues in the contrary of static trade-off theory, there are empirical studies that emphasis on the relationships between capital structure and profitability/performance of firms.

Salim & Yadav (2012) examined the relationship between capital structure and firm performance. The investigation was performed using panel data procedure for a sample of 237 Malaysian listed companies on the Bursa Malaysia Stock exchange during 1995-2011. The study used four performance measures (including return on equity (ROE), return on asset (ROA), Tobin's Q and earning per share (EPS)) as dependent variable. The five capital structure measure (including long term debt (LTD), short term debt (STD), total debt (TD) ratios and growth) as independent variable. Size is a control variable. The data are divided into six sectors which are construction, consumer product, industrial product, plantation, property, trading and service. The empirical tests indicate that capital structure (especially TD and STD) negatively impacts performance measured by ROE. On the other hand capital structure (LTD and TD) has negative significant impact on firm's performance measured by ROA. Furthermore, findings of this study suggest that there is a significantly positive relationship between Tobin's Q (firm performance) and capital structure measured by LTD and STD. Finally, the results show that Tobin Q has a positive and significant relationship with size (as control variable) for all sectors under study except for property sector a negative effect on the Tobin's Q observed.

Farhad & Aliasghar (2013) also studied the relationship between capital structure and Profitability using data from 252 non-financial companies in the period from 1999 to 2008 in Tehran Stock Exchange. Consistent with earlier theories, found a positive association between the return on equity (ROE) and short-term debt. This suggests increasing short-term debts with low interest rate will lead to increase in profitability. Furthermore, the results revealed a negative association between ROE and long-term debt. So, when firms increase long-term debts, this results to decrease in profitability. Finally, the results also indicate a positive relationship between ROE and total debt.

Abor (2005) investigated the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) during a five-year period (1998-2002). Panel data methodology and regression analysis were used in the estimation of

functions relating the return on equity (ROE) with measures of capital structure. And, the finding revealed a significantly positive relation between the ratio of short-term debt to total assets and ROE. However, a negative relationship between the ratio of long-term debt to total assets and ROE was found. This implies that an increase in the long-term debt position is associated with a decrease in profitability. With regard to the relationship between total debt and return rates, the results show a significantly positive association between the ratio of total debt to total assets and return on equity.

Shubita & alsawalhah (2012) extend Abor's (2005), and Gill (2011) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the industrial companies listed on Amman Stock Exchange during a six-year period (2004-2009). The study sample consists of 39 companies and applied correlations and multiple regression analysis. The results revealed significantly negative relation between debt and profitability. These findings imply that an increase in debt position is associated with a decrease in profitability; thus, the higher the debt, the lower the profitability of the firm. The results also show that profitability increases with control variables; size and sales growth. The findings of this paper contradict with prior empirical studies like Abor (2005). Yet recommendations based on findings are offered to improve certain factors like the firm must consider using an optimal capital structure and future research should investigate generalizations of the findings beyond the manufacturing sectors.

In consistent with the Shubita & alsawalhah (2012) findings, Chechet & Olayiwola (2014) examined capital structure and profitability of the Nigerian listed firms from the Agency Cost Theory perspective with a sample of seventy (70) out of population of two hundred and forty-five firms listed on the Nigerian stock exchange (NSE) for a period of ten (10) years: 2000 - 2009 with the aid of the NSE Fact Book covering the period under review. Panel data for the firms are generated and analyzed using fixed-effects, random-effects and Hausman Chi Square estimations. Two independent variables which served as measure of capital structure were used in the study: debt ratio (DR) and equity over the period (EQT) while profitability (PROF) as the only

dependent variable. The result showed that DR is negatively related with PROF, but EQT is directly related with PROF.

Nirajini & Priya (2013) studied the Capital structure and financial performance during 2006 to 2010 (05 years) financial year of listed trading companies in Sri Lanka. For the purpose of this study, the data was extracted from the annual reports of sample companies. Correlation and multiple regression analysis were used for analysis. The results revealed a positive relationship between capital structure and financial performance. And also capital structure is significantly impact on financial performance of the firm showed that debt asset ratio, debt equity ratio and long term debt correlated with gross profit margin (GPM), net profit margin (NPM), Return on Capital Employed (ROCE), Return on Asset (ROA) & Return on Equity (ROE) at significant level of 0.05 and 0.1.

Mohammadzadeha et al. (2013) in their study scrutinized the relationship between the capital structure and the profitability of pharmaceutical companies in Iran. To meet the purpose of the study, top 30 Iranian pharmaceutical companies defined as study samples and their financial data were gathered for the period of 2001-2010. In this study, the net margin profit and debts to asset ratio were used as indicators of profitability and capital structure, respectively and sales growth was used as a control variable. Results showed that there was significant negative relationship between the profitability and the capital structure which means that the pharmaceutical companies established a Pecking Order Theory and the internal financing has led to more profitability.

Apart from non-financial institutions, there are some empirical studies in the financial sectors. Taani (2013) examined the impact of capital structure on performance of Jordanian banks. The annual financial statements of 12 commercial banks listed on Amman Stock Exchange were used for the study which covers a period of five (5) years from 2007-2011. Multiple regressions was applied on performance indicators such as Net Profit (NP), Return on Capital Employed (ROCE), Return on Equity

(ROE) and Net Interest Margin (NIM) as well as Total Debt to Total Funds (TDTF) and Total Debt to Total Equity (TDTE) as capital structure variables. The results showed that bank performance, which is measured by net profit, return on capital employed and net interest margin is to be significantly and positively associated with total debt; while total debt is found to be insignificant in determining return on equity in the banking industry of Jordan.

Opoku, Adu, & Anarfi (2013) also studied the impact of capital structure and profitability of listed banks on the Ghana Stock Exchange using a panel data methodology. Capital structure theories were utilized to provide the theoretical basis for the work. The study considered all the 9 banks listed on the Ghana Stock Exchange over the period 2005-2012. The distribution patterns of data and applied statistical techniques used in the study include descriptive statistics, correlation analysis and regression analysis. The study variables also include Return on Asset, Return on Equity, Tobin's q ratio, Economic Value Added (EVA) being the dependent variables and independent variables are: Total Leverage, Debt to Equity ratio, Total Liability of the banks, Size and the Age of the banks. The finding reviled that, profitability measured by returns on equity is inversely and significantly influenced by the total leverage ratio which is also dependent of the capital structure of the banks. The debt equity ratio of the bank has a positively significant relationship with returns on equity. The capital structure variable, total liabilities of the listed banks also recorded statistics clearly indicating that, the total liabilities of the listed banks does not make a significant contribution on their return on equity. As far as the size of the banks is concerned, the study reveals that the size of the banks does not have a significant impact on their returns on equity. However there was a sort of positive relation between the two variables during the study period. Meanwhile, the results for returns on equity and their years of operation had a significantly negative relationship between them, meaning as the banks grow in age, their profitability levels reduces significantly. The relationship between Capital Structure and Profitability, as well as the impact of Capital Structure on Profitability across the banks by returns on equity, reveals that the profitability of the listed banks on the

Ghana Stock Exchange decreases significantly with increase in their total leverage. Therefore there is a clear indication that, Capital Structure has a significant impact on the profitability of the listed banks on the Ghana Stock Exchange. Also at an average total leverage ratio of about 76%, there exist a negative relationship between profitability and capital structure therefore indicating that, the optimal capital structure for the sector is definitely not 76% or more.

In addition to the above studies in banking industries, Goyal (2013) also investigated the impact of capital structure on profitability of public sector banks in India listed on national stock exchange during 2008 to 2012. Panel data and multiple regression models were used to find out the association between capital structure characteristics and banks performance in the context of India. The findings of study validated a strong positive dependence of short term debt to capital (STDTC) on all profitability measures (ROA, ROE and EPS). Whereas, Long term debt to capital (LTDTC) & TDC having a negative relationship with return on assets (ROA), return on equity (ROE) and earnings per share (EPS). Firm size (SIZE) experienced an optimistic connection with variables (ROA, and EPS) and negative with ROE. Assets growth (AG) proposed a positive relationship with return on asset and return on equity and earning per share.

Besides, Yegon, Cheruiyot, & Sang (2014) empirically investigates the relationship between capital structure and the firm's profitability of banking industry in Kenya, by using panel data extracted from the financial statements of the companies listed on the Nairobi Stock Exchange from year 2004-2012. Linear regression model were used to investigate the nature of relationship between Capital Structure and profitability. The author's rationale behind the industry specific analysis is the fact that exogenous variables appear to force institutions in the same industry in similar fashion, thus leading to the existence of an industry specific capital structure. On the basis of findings, it is documented that short term debt has significant positive relationship with the profitability. This suggests that short-term debt tends to be less expensive, and therefore incremental short-term debt in capital structure will lead to

an increase in profit levels. Therefore short term debt is the preferable source of financing for the profitable institutions. Whereas long term debt has significant negative relationship with the profitability that envisage long-term debts are relatively more expensive due to certain direct and indirect costs, therefore employing high proportions of long term debt in financial structure results in low profitability. Empirical results indicate no significant association between total debt and profitability the inclination of individual results provide the logical justification for surprising result. On the basis of these findings it is concluded that the relationship between short term debt and the profitability is consistent with the static trade-off theory not because of the tax shield rather some other unexplored factor. The underlying rationality is, interest on long term debt is also tax deductible expense like short term debt but the results are quite opposite in direction. Pecking order theory is true but with the addition of short term debt on top of the hierarchy of preference. Implicit in such testing is that both theories have certain elements that are mutually exclusive. Both the theories as a whole can hold true but with the suggested accompaniments.

In their study of the Effect of Capital Structure on the Performance of Palestinian Financial Institutions, Abbadi & Abu-Rub (2012) used Return on Equity (ROE) as accounting performance measure while Tobin's Q was used to measure the market performance of the firms. The independent variables used in both measures were the bank deposits to total assets, total bank loans and other investment and net profit. The deposit to total asset was used as a measure of bank leverage. Using Multiple Linear Regression they found strong correlation between return on assets and efficiency; and total deposit to total assets and efficiency. The same variables have the same effect on market value while loans have a weak effect.

In Ethiopia, there is no empirical study directly related with the subject matter of this study, "The impact of capital structure on profitability of Commercial Banks of Ethiopia" with an emphasis on core business operations profitability of banks. However, there are a few studies in some areas of corporate finance. Usman (2013)

examined the determinants of capital structure of large taxpayer share companies in Ethiopia. Econometric analysis were performed for a panel of 37 listed companies in Ethiopian Revenue and Customs Authority (ERCA) large taxpayers' branch office in Addis Ababa for the study period of 2006–2010. Nine conventional explanatory variables were adopted in the study, including profitability, size, age, tangibility, liquidity, non-debt tax shield, growth, and dividend payout ratio and earnings volatility. As a result of the improvement in the existing estimation methods that enables to employ cross-sectional and time-series data concurrently, random-effect panel data regression was applied to study the effect of selected independent variables on capital structure. The result showed that size, age, tangibility, liquidity position and non-debt tax shield of a company are positively correlated with leverage, whereas profitability, earnings volatility and dividend payout ratio are negatively associated with leverage. Growth variable was found to be statistically insignificant in affecting leverage of large taxpayer share companies in Ethiopia. Based on the sign of these relations the Author also indicated that, Agency cost theory provide more convincing evidence than other capital structure theories in elucidating the capital structure of large taxpayer share companies in Ethiopia.

Furthermore, from empirical studies in the banking sector of Ethiopia Weldemikael (2012) examined the relationship between leverage and firm specific (profitability, tangibility, growth, risk, size and liquidity) determinants of capital structure decision, and the theories of capital structure that can explain the capital structure of banks in Ethiopia using a mixed method research approach by combining documentary analysis and in-depth interviews. More specifically, the study used twelve years (2000 - 2011) data for eight banks in Ethiopia. The findings reviled that profitability, size, tangibility and liquidity of the banks are important determinants of capital structure of banks in Ethiopia. However, growth and risk of banks are found to have no statistically significant impact on the capital structure of banks in Ethiopia. In addition, based on the results of the analysis the Author indicated 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. Hence, the

author recommended banks to give due consideration to profitability, size, liquidity and tangibility in their determination of optimum capital structure.

On the other hand, Amdemikael (2012) also assessed the factors that affect bank profitability in Ethiopia covering the period of 2000-2011. Mixed research approach (data obtained through the structured document reviews and in-depth interviews) were applied. The analysis also managed through the multiple linear regressions model, OLS. The dependent variable was ROA as a single measure of profitability and it was measured as net profit before tax divided by total assets. The independent variables includes; equity-to-total asset ratio (the inverse of the leverage ratio), Operational efficiency, Income diversification, Liquidity risk, Asset Quality, Real GDP growth and Inflation. The result indicated that capital strength is one of the main determinants of profitability of banks in Ethiopia.

2.4 Variables summary & Conceptual framework

The seminal work by Modigliani and Miller (1958) in capital structure provided a basis for the development of the theoretical framework within which various theories were about to emerge in the future. Modigliani and Miller (1958) concluded to the broadly known theory of "capital structure irrelevance" where financial leverage does not affect the firm's value. By incorporating tax benefits as determinants of the capital structure of firms, Modigliani and Miller (1963) proposed to use as much debt capital as possible in order to maximize the value of firms. Furthermore, as stated in the theoretical review section of this paper, subsequently a number of concepts profitability/firm value and theories of capital structure such as the static trade-off theory, pecking order theory and agency cost theory were developed.

These theoretical concepts also tested by different empirical studies of different researchers in different business sectors around the world. In examining the impact of capital structure on profitability /performance as stated above in the empirical review section, a number of variables were used by different authors.

The summary of variable used by different researchers as stated above are:

Dependent variables: Profitability measured as return on equity (ROE), return on asset (ROA), Tobin's Q ratio, economic value added (EVA), earning per share (EPS), return on capital employed, and net interest margin (NIM).

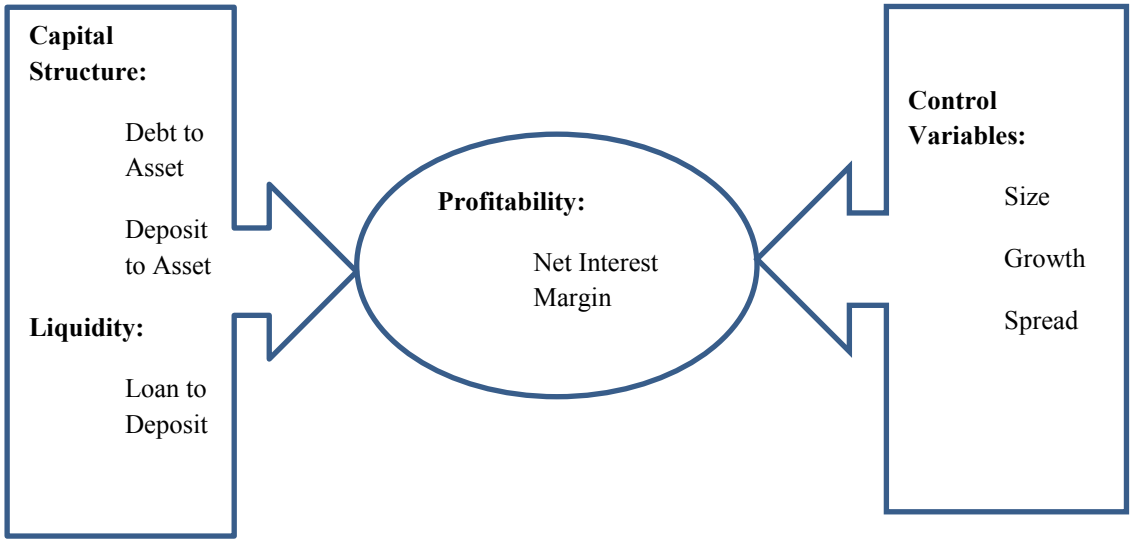
Independent variables: Capital structure related variables such as total debt to asset (TDA), total debt to total fund (TDTF), total debt to equity (TDEQ), Capital adequacy (equity to asset), total liability of banks, short-term debt, log-term debt, deposit to total asset as a measure of bank leverage, total bank loan, other investment, liquidity risk, Asset quality, loan to asset, bank efficiency ratio, and loan to deposit etc.

Control variables: The control variables used in the above literatures are asset size, asset growth, sales growth, GDP growth, inflation, operational efficiency, and spread, etc.

In the studies of Ethiopia however, in both case that is, in the study of determinants of capital structure and factors affecting profitability of banks only ROA and ROE used as a measure of profitability and Capital adequacy and total debt to asset used as independent variables to represent capital structure.

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

Figure 2.1: Conceptual framework



The variables used to develop the above conceptual framework was in reference to Taani (2013), Okoth (2013), Goyal (2013), Arkhavien (1997), Abbadi & Abu-Rub (2012), Eltabakh et al. (2014), Vickery (2011), Irungu (2013), and Opoku et al. (2013).

The above conceptual framework indicates that the capital structure of commercial banks affects their profitability. Capital structure of commercial banks measured by Total Debt to Total Asset ratio with the concept that financing decisions through both the deposit and non-deposit liabilities of banks have impact on banks profitability. Furthermore, as the banking operation depends on deposit mobilization strategies and capacity of banks, Deposit to Total Asset Ratio is the major part of source of finance which ultimately affects profitability hence for the purpose of this study it is considered as a second measure of capital structure so that to scrutinize the impact of deposit and non-deposit liability on profitability. Likewise, with the concept of the relationship between liquidity and profitability loan to deposit ratio also considered as a liquidity measure.

Besides, though there are different measures of profitability to be used as variables in measuring profitability of banks, this study considered Net Interest Margin (NIM) as measure of profitability of the core business operations of commercial banks in Ethiopia, with the conventional concept that the core business operation's profitability depends on the interest income, interest expense, and efficient management of the respective interest earning assets.

Moreover, with the concept that profitability of banks also depends on asset size, growth, and collection and payment of interest, the banks' asset size and growth as well as spread was taken as control variable.

2.5. Conclusion and knowledge gap

All the aforementioned theoretical and empirical works serve as a basis for further studies in the areas of capital structure and firm's performance or profitability because most of their findings contradict each other. For instance, Salim & Yadav (2012) examined the relationship between capital structure and firm performance and found that capital structure (especially TD and STD) negatively impacts performance measured by ROE, which is consistent with Ebaid (2009) who also documented the same results. On the other hand capital structure (LTD and TD) has negative significant impact on firm's performance measured by ROA and these findings are consistent with Rajan & Zingales (1995), Zeitun & Tian (2007) and Abor (2007) who indicated that firm's performance is negatively related to capital structure. These findings are also against Champion (1999), Ghosh, Nag, & Sirmans (2000), Hadlock & James (2002), and Frank & Gayol, (2003) as well as Berger & Patti (2006) who concluded a positive relation between firm performance and capital structure.

Furthermore, Abor (2005) in his study of the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) found a significantly positive relation between the ratio of short-term debt to total assets and ROE. However, a negative relationship between the ratio of long-term debt to total assets and ROE was found. This implies that an increase in the long-term debt position is associated with a decrease in profitability. With regard to the relationship between total debt and return rates, the results show a significantly positive association between the ratio of total debt to total assets and return on equity, whereas, Shubita & alsawalhah (2012) found significantly negative relation between debt and profitability and imply that an increase in debt position is associated with a decrease in profitability; thus, the higher the debt, the lower the profitability of the firm. The results also show that profitability increases with control variables; size and growth.

In the context of Ethiopia, while Usman (2013) examined the determinants of capital structure of large taxpayer share companies in Ethiopia, Weldemikael (2012) on the relationship between leverage and firm specific (profitability, tangibility, growth, risk, size and liquidity) determinants of capital structure decision of banks, as well as Amdemikael (2012) also assessed the factors that affect bank profitability in Ethiopia, they were used limited measures of leverage/ capital structure and profitability in their study. For example, Usman (2013) used only long-term debt to total asset as a measure of leverage and the ratio of earnings before interest and tax (EBIT) to total asset as a measure of profitability and Weldemikael (2012) applied total debt to total asset as a measure of leverage and the ratio of earnings before interest and tax (EBIT) to total asset as a measure of profitability. Besides, Amdemikael (2012) managed his study using ROA as a measure of profitability and Equity to asset ratio as a measure of capital strength. All of the above studies failed to investigate the impact of the main external financing source of banks, deposit on profitability of core business operations, and emphasized on overall performance of banks.

Hence, given the contradicting results of earlier studies on the relationship between capital structure and profitability, the limited and inconsistent measures of variables used in the past researches in Ethiopia as well as the unique nature of the operation and capital structure of banking sector, there is an objective ground to study the impact of financing decision/ capital structure on profitability in the context of banking industry working in Ethiopia with a focus on the profitability of core business operations of banks. Furthermore, to the best of the researchers' knowledge there is no evidence documented on the impact of capital structure on profitability of core business operations of Commercial banks in Ethiopia.

Therefore, this study was designed to scrutinize the impact of capital structure on profitability of core business operations of Commercial banks in Ethiopia by using net interest margin (NIM) as measure of profitability of the core business operations of banks, and capital structure/ leverage (measured as Total Debt to Asset and Deposit to Asset) as well as taking in to account the effect of liquidity (as measured by Loan to deposit) on profitability. Besides, in order to control the impact of other factors in the model the study used Size of banks (measured as book value of asset) and growth (measured as percentage increase and/or decrease from earlier period in assets of banks) as well as spread were used as control variables.

Chapter 3: Research Design and methodology

The previous chapter presented the literature review along with the knowledge gap which this study intended to address. The purpose of this chapter is to discuss the methods adopted throughout the study to accomplish the research objectives. The chapter is organized as follows: The first section 3.1 presents the research design adopted to examine the impact of capital structure on profitability, while section 3.2 is about the data source and collection methods. The sampling design and data analysis techniques presented in section 3.3 and 3.4 respectively. Furthermore, section 3.5 sates about model specification and variable description, and finally, section 3.6 and 3.7 presented the summary of variables used in the Study and their expected sign/impact together with associations with data source, and the null hypothesis tested in the study respectively.

3.1. Research Design

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.

Hence, to meet the objectives of this study, explanatory research design was adopted. Besides, this study used quantitative research approach to examine a stated objective

because quantitative research is a systematic and scientific investigation of quantitative properties and phenomena and their relationships (Abiy, 2009).

Panel data of eight commercial banks for twelve years (2002 to 2013) 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.

3.2 Source of data and collection methods

Given the research design, secondary data was used to meet the objectives of the study. According to Stewart and Kamins (1993) cited in Li Yuqi (2007), secondary data have its own advantages. Compared to primary data, secondary data gives higher quality data, the feasibility to conduct longitudinal studies and the permanence of data. That is, secondary data generally provide a source of data that is both permanent and available in a form that can be checked relatively easily by others and increases the dependability of the data, hence ensure data quality.

As a result, the data for the banks' capital structure and profitability indicator variables was obtained from audited financial statements of the respective banks. Thus, the data were collected from National Bank of Ethiopia (NBE) and from the respective commercial banks. In order to avoid the risk of distortion in the quality of data, the data was the audited financial statements particularly balance sheet and income statement.

The study included eight commercial banks composed of two state owned and six private banks. Accordingly, this study used panel data of eight commercial banks for twelve years (2002 to 2013) resulted in 96 observations.

3.3 Sampling design

The population of the study was all commercial banks registered by National Bank of Ethiopia (NBE). Currently, as per NBE (2013/14) annual report the major financial institutions operating in Ethiopia are banks, insurance companies and micro-finance institutions. The numbers of banks operating in the country are 19, of which 16 are private banks, and the remaining 3 are state-owned. From these 19 banks only 18 banks are Commercial Banks. This is excluding the Development Bank of Ethiopia which provides banking service to the selected government priority sectors.

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. Thus, banks that operate less than twelve years were excluded from the sample. Due to this, from 18 commercial banks operating in the country this study takes sample of eight banks namely, commercial bank of Ethiopia (CBE), Construction and business bank (CBB), Dashen bank (DB), Awash international bank (AIB), Bank of Abyssinia (BOA), Wegagen bank (WB), United bank (UB) and Nib international bank (NIB) for the period of 2001/02 to 2012/13 (in which audited financial statements were available). Until the date of data collection for this study, most of banks were not finalized and submitted their audit report for the year 2013/14 to the National Bank of Ethiopia (NBE). As a result, the year 2013/14 data were excluded.

According to NBE 2013/14 report, the sample banks market share in terms of branch network and capital was 79.7 % and 75% respectively (see Annex III). Besides, they have good experience in the banking operation and the sample taken also 44.44 % of the total population of 18 commercial banks in the country. Hence, it is believed to make generalization from sample to population.

3.4 Data analysis method

To achieve the objectives the study, panel data of eight commercial banks for twelve years (2001/02 to 2012/13) 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 EViews version 8.1software, 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.

Finally, the Hausman specification test was used to choose the appropriate model for this study between the random effect (RE) and fixed effect (FE) model. Thus, based on the result of this test, the fixed effects model was found to be appropriate and applied for the study.

Therefore, the multiple regression result of the fixed effect model used to analyze the impact of capital structure on profitability of core business operation of commercial banks of Ethiopia, and to examine the relationship between the variables used in this study.

3.5 Model specification and variables description

3.5.1 Variables description

This study used explanatory variables such as total debt to asset, deposit to asset, loan to deposit, spread, growth and asset size while the dependent variable was net interest margin. The variables descriptions are stated below.

3.5.1.1 Dependent Variable

Net interest margin (NIM)

Net Interest Margin (NIM) was used as a dependent variable and it measured as the difference between the interest income and interest expense divided by total interest earning assets. Okoth (2013) states that net interest margin reflect the cost of banks intermediation services and the efficiency of the bank. And hence, the higher the net interest margin, the higher the profit earned by the bank and the more stable the bank is. Therefore, it measures the profitability core business operations of banks.

The fact that the profitability of core business operation of banks would be directly and reasonably measured by net interest margin, this study examined profitability of banks' core business operation using net interest margin (NIM) as a dependent variable. Earlier studies also employed net interest margin (NIM) as profitability measure. Some of them are Taani (2013), and Okoth (2013).

The formula used to calculate the NIM was;

$$NIM = \frac{\text{Interest Income} - \text{Interest Expense}}{\text{Interest Earning Assets}}$$

3.5.1.2 Independent Variables

Total Debt to Asset (TDA)

The total debt to asset variable used to represent the proportion of banks asset/operation financed by debt, hence used as one measure of the capital structure of banks. Goyal (2013), and Arkhavien (1997) found statistically significant negative relationship between profitability and leverage. This is also consistent with the pecking order theory of capital structure. Hence taking into account the earlier empirical studies and the nature of financing structure of banking industry in Ethiopia, negative relationship with profitability was expected. For the purpose of this study it was calculated as:

$$TDA = \frac{\text{Total Debt}}{\text{Total Asset}}$$

Deposit to asset (DPA)

As the major source of external finance is deposits, deposit to asset ratio was used as an independent variable to examine the impact of deposit on profitability of commercial banks in Ethiopia. Since the total debt of banks composed of deposit and non-deposit liabilities, this variable intended to show the impact deposit financing and hence the non-depsit financing decesion on profitability. Abbadi & Abu-Rub (2012) found Positive relationship between deposit to asset and profitability. Based on the nature of banks operation and emperical evidences, in this study a positive relationship between deposit to asset ratio and profitability of banks were expected.

The foumula used to calculate this variable was;

$$DPA = \frac{\text{Total Deposit}}{\text{Total Asset}}$$

Loan to Deposit (LD)

The Loan to deposit (LD) ratio serves as bank liquidity measure. It measures the funds that banks utilized into loans from the collected deposits in the period under study. It validates the association between loans and deposits. Furthermore, as it is indicated in Makri (2014), it provides a measure of income source and the liquidity of bank asset tied to loan. Eltabakh, Ngamkroeckjoti, & Siad (2014) found statistically significant positive relationship between profitability and loan to deposit ratio. Since, the major source of interest income comes from loans and with reference to empirical studies, in this study it was expected to have positive relation with profitability of core business operation of banks.

Loan to deposit calculated as:

$$LD = \frac{\text{Total loan}}{\text{Deposit}}$$

Spread (SPR)

The purpose of this variable in this study was to serve as control variable. Khumaloand, Olalekan, & Okurut (2011) used the definition of spread as the difference between income received on loans (divided by total loans) and interest paid on deposits (divided by total deposits). The empirical studies of Vickery (2011) and Irungu (2013) revealed a positive relationship between spread and net interest margin or profitability. Due to the fact that the profitability of core operations of banks depends on interest income and expense and in line with empirical evidences, in this study a positive relationship between spread and profitability was expected. The formula used to calculate was:

$$\text{Spread} = \frac{\text{Interest Income}}{\text{Loan \& Advance}} - \frac{\text{Interest Paid}}{\text{Deposit}}$$

Growth (AGR)

This variable included in the study to serve as a control variable. Percentage change in banks' asset has been used as a proxy for growth. Assets growth was used by many scholars in their studies, for example Goyal (2013) used asset growth as a growth opportunity of banks and found a positive relationship with profitability.

Ideally, a trend of positive relationship with net interest margin expected. A positive relationship to a large extent may imply operational efficiency in the banking sector of Ethiopia. A negative relationship between the dependent variables and growth however is an indication that Commercial banks in the country do not really efficient in utilizing the growth opportunity in their core business operation. In this study a positive relationship is expected between the dependent variables NIM and Asset growth (AGR). And for the purpose of this research it is calculated by the following formula.

Assets growth= (assets of current year-assets of previous year)/assets of current year

Asset Size (Size)

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

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

profitability increases as well. Nevertheless, many other studies suggested that little cost saving can be achieved by increasing the size of banks. Similarly, Berger (1987) contended that ultimately very large banks could face scale inefficiencies.

For the purpose of this study, bank size has been taken as the natural logarithm of the book value of total assets of the banks. The use of logarithm enables to get the real total assets of the banks due to its capability to standardize values thus bringing them on the same platform for a more efficient analysis to be done.

Since a statistically positive and significant association with the dependent variables will imply the existence of the scale efficiency hypothesis in the banking sector of Ethiopia, and hence, based on the above and theoretical ground, in this study a positive relationship between asset size and profitability was expected.

3.5.2 Model specification

As it is clearly indicated in the previous sections, panel data regression model was adopted for this study. Panel data was generated using both time series and cross-sectional data from the audited financial statements of the banks. It was also ideally used because it helps in the identification of effects that cannot be easily pointed out using purely cross- section or time series data, and other important features.

This study used explanatory variables such as debt to asset, deposit to asset, loan to deposit, spread, growth and asset size while the dependent variable was net interest margin.

To meet the objective of the study and to find out the impact of capital structure on the profitability of the core business operation of commercial banks in Ethiopia, the model used by Opoku et al. (2013) and Goyal (2013) with some modification to include relevant variable was applied. The modification was made to include net interest margin (NIM) as a dependent variable, explanatory variables such as Deposit

to asset (DPA) as a second measure of capital structure, loan to deposit (LD) as a measure of liquidity tide to loan, and spread as a control variable.

The general model;

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

Where,

Y_{it} = is the dependent variable.

B_0 = is the intercept.

X_{it} = is the independent variable.

μ_{it} = are the error terms.

i = is the number of firms and

t = is the number of time periods.

The subscript i representing the cross-sectional dimension and t denote the time-series dimension.

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

$$NIM_{it} = \beta 0_{it} + \beta_1 TDA_{it} + \beta_2 DPA_{it} + \beta_3 LD_{it} + \beta_4 Log\ (SPR)_{it} + \beta_5 AGR_{it} + B_6 Log\ (SIZE)_{it} + \mu_{it}$$

Where,

NIM_{it} = Net Interest Margin for bank i in year t

TDA_{it} = Total Debt to Asset ratio for bank i in year t

DPA_{it} = Total Deposit to Asset ratio for bank i in year t

LD_{it} = Loan to Deposit ratio for bank i in year t

$Log\ (SPR)_{it}$ = Log of Spread for bank i in year t

AGR_{it} = Asset Growth for bank i in year t

$Log\ (SIZE)_{it}$ = Log of Asset Size for bank i in year t

3.6 Summary of variables used in the Study and their expected sign/impact and associations with data source

Table 3.1: Summary of variables used in the Study and their expected sign/impact and associations with data source

Category	Variables	Measurement / Ratios used	Expected sign/ impact of independent on the dependent variable	Data source
Dependent variable	Net Interest Margin (NIM)	Net Interest Income / Interest Earning Assets		Audited Statements (Income statement and Balance sheet) of sample banks and data from National bank of Ethiopia (NBE)
Independent Variables	Debt to Asset	Total Debt/Total Asset	-	
	Deposit to asset	Total deposit/Total Asset	+	
	Loan to Deposit	Loan/Total Deposit	+	
	Spread	(Interest Income /Loan) - (Interest Expense / Deposit)	+	
	Growth	% Change in Asset	+	
	Size	Book Value of Total Asset	+	

3.7 The research hypothesis

As it is stated in chapter one, the major objective of this study was to examine the impact of financing decision or capital structure on profitability of core business operations of commercial banks in Ethiopia and to scrutinize the relationship between capital structure variables and profitability. To achieve this objective, the following null hypotheses concerning the impact of capital structure on profitability of core business operations of Commercial banks were tested.

H1: There is no significant relationship between capital structure proxied by Total Debt to Asset and profitability of core business operations of commercial banks in Ethiopia.

H2: There is no significant relationship between capital structure proxied by Deposit to Asset and profitability of core business operations of commercial banks in Ethiopia.

H3: There is no significant relationship between Loan to Deposit and profitability of core business operations of commercial banks in Ethiopia.

H4: There is no significant relationship between Spread and profitability of core business operations of commercial banks in Ethiopia.

H5: There is no significant relationship between growth and profitability of core business operations of commercial banks in Ethiopia.

H6: There is no significant relationship between Asset size and profitability of core business operations of commercial banks in Ethiopia.

Conclusion:

This chapter presented the research method adopted to address the objectives of the study. It also explained the research design adopted to examine the impact of capital structure on profitability. Based on the underlying principles of research methods and the research problem as well as the nature of data used, quantitative methods approach panel data methodology has been chosen as appropriate to this research. Besides, this chapter puts forward the necessary information about the data source and collection methods, sampling design and data analysis, as well as model specification and variable description. Finally, it presented the summary of variables used in the study and their expected sign and associations with data source as well as the null hypothesis tested in the study.

Chapter 4: Results and Discussion

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

4.1 Summary of statistics

As clearly mentioned in earlier chapters, in this study a sample of 8 commercial banks for 12 year (2001/02 – 2012/13) 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 a profitability measure of the core business operation of banks, Net Interest Margin (NIM) was taken as a dependent variable. Whereas, the Total Debt to Asset (TDA), Deposit to Asset, Loan to Deposit, Spread, Growth, and Asset size were used as independent variables.

Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables for eight commercial banks of Ethiopia for the period of 12 years from year 2001/02-2012/03 with a total of 96 observations.

Table 4.1: Descriptive Statistics

	NIM	*TDA*	*DPA*	*LD*	*SPR*	*AGR*	*SIZE*
Mean	0.039370	0.887292	0.753913	0.701211	0.069144	0.270064	12,974.92
Maximum	0.057250	0.962570	0.871520	1.211720	0.117740	0.733210	197,104.00
Minimum	0.009500	0.719750	0.541460	0.296870	0.015190	-0.019100	314.00
Std. Dev.	0.010188	0.040360	0.071464	0.194006	0.018678	0.152710	29,382.92
Observations	96	96	96	96	96	96	96

Source: Financial statements of sample banks and own computation

As it is presented in the table, it includes the mean, standard deviation, number of observations, minimum and maximum for the dependent and independent variables of the model. It shows the average indicators of variables computed from the financial statements.

As shown in chapter three, profitability of core business operations of commercial banks was measured by Net interest margin (NIM) which in turn calculated as net interest income divided by interest earning assets. The mean of Net Interest Margin (NIM) was 4% and standard deviation 1%. This means commercial banks in Ethiopia, under the period of study, earned on average 4% net interest margin from their investment in interest earning assets. This also means that on average, for each one birr investment in the interest earning asset of commercial banks there was 0.04 cent return in the form of net interest income. The highest NIM for a bank in a particular year was 6% and in the same way the minimum ratio for a bank in a year was 1%. Regarding the standard deviation, it means that the value of net interest margin can deviate from its mean to both sides by 1%.

The leverage/ capital structure was represented by debt ratio (total debt divided by total asset) and then deposit to asset ratio also used as a second measure of capital structure of banks to examine the impact of deposit and non-deposit liability on profitability of banks. The mean of debt ratio of the sampled banks in the study

period was 89%. It reveals that debt represents nearly 89% of the capital of commercial banks in Ethiopia. The highest debt ratio for a bank in a particular year was 96% and in the same way the minimum ratio for a bank in a year was 72%. The value of debt to asset ratio can deviate from its mean to both sides by 4%. From the summary of statistics it was observed that 89% of the total capital of commercial banks in Ethiopia in the period under study was made up of debt. Of this, 75% constitute deposit and the remaining was non-deposit liabilities. This has reaffirmed the fact that banks are highly levered institutions.

Similarly, the mean of deposit to asset ratio of the sample banks in the study period was 75%. It reveals that total deposit represents on average nearly 75% of assets of commercial banks in Ethiopia. The highest deposit to asset ratio for a bank in a particular year was 87% and in the same way the minimum ratio for a bank in a year was 54%. The value of deposit to asset ratio can deviate from its mean to both sides by 7%.

Furthermore, the loan to deposit ratio was used as a proxy for bank liquidity tide to loan. The mean of loan to deposit ratio of the sample banks in the study period was 70%. It reveals that loan represents on average nearly 70% of deposit of commercial banks in Ethiopia. The highest loan to deposit ratio for a bank in a particular year was 121% and this reveals that banks loan advances to customers from deposit and non-deposit sources of finance. This 121% was observed due to the highest loan to deposit ratio of Construction and Business Bank (CBB) in the year 2006. In the same way the minimum ratio for a bank in a year was 30%. The value of loan to deposit ratio can deviate from its mean to both sides by 19%.

Moreover, the descriptive statistics shows that the average value of the growth variable which represented by percentage change in asset was 27 %. This implies that on average the commercial banks' asset increased by 27 % over the study period. The maximum value of growth for the study period was 73% and the minimum value was -2%. The value of asset growth can deviate from its mean to both sides by 15%.

Likewise, the mean of the firms' size which was represented by the book value of total assets was Birr 12,974.92 (in million) with a standard deviation of Birr 29,382.92 (in million). Total assets for the sample banks in the study period were ranged from Birr 314.00 (in million) to Birr 197,104.00 (in million). And this highest asset size was observed in the balance sheet of Commercial Bank of Ethiopia (CBE) in the year 2013, and the possible reason for this also the aggressive branch expansion throughout the country and its investment in different assets such loan advances and other Investments/ bonds etc. Similarly, the minimum asset size was observed in the balance sheet of United Bank (UB) in the year 2002. The possible reason could be the year 2002 was its infant stage in the banking business operation.

Besides, summary of test statistic shows that the mean of spread was 6.9% with the standard deviation of 2%. Moreover, the study sample spread was ranged in between 2% to 12%.

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

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

4.2.1 Assumption one: the errors have zero mean (E (ε) = 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.

4.2.2 Assumption two: homoscedasticity (variance of the errors is constant (Var (ut) = σ2 < ∞)

According to this assumption, if the errors do not have a constant variance, it is said to be 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 existence of heteroscedasticity across the range of explanatory variables.

Table 4.2 Heteroskedasticity Test: White

F-statistic	1.525723	Prob. F(6,89)	0.1789
Obs*R-squared	8.953416	Prob. Chi-Square(6)	0.1762
Scaled explained SS	6.420028	Prob. Chi-Square(6)	0.3778

Source: Financial statements of sample banks and own computation

As it is indicated in in table 4.2 the result shows that the F-, X^2, and scaled explained SS versions of the test statistic give the same conclusion that the p-values were greater than 0.05. Therefore, the absence of heteroscedasticity confirmed.

4.2.3 Assumption three: covariance between the error terms over time is zero (cov (ut, uj) = 0)

This is an assumption that the errors are linearly independent of one another (uncorrelated with one another). If the errors are correlated with one another, it would be stated that they are autocorrelated.

According to Brooks (2008), 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 the existence of negative autocorrelation 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 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.

The DW test statistic value of the regression result of this study was 2.188048. There are 96 observations in the regression and 6 regressors excluding the intercept. As per the DW statistics significance table, at 5% significance level the relevant critical values for the test were dL = 1.535 and dU = 1.802, and the related calculated figures of 4 − dU = 2.198 and 4 − dL = 2.465. The test statistic (2.188048) fall between the upper (dU = 1.802) and 4 minus the upper limits (4 − dU = 2.198). Therefore, the null hypothesis is not rejected and no significant residual autocorrelation is presumed.

In addition, another test called Serial Correlation LM Test also managed to validate the result of the DW test result. The 4 lag and 5 lag Breusch-Godfrey Serial Correlation LM Test result as indicated in the below Table 4.3 and 4.4 shows that the P-values of F-statistic and Obs*R-squared are greater than 5% and hence, and hence, the null hypothesis is not rejected and no significant residual autocorrelation is presumed.

Table 4.3 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.030354	Prob. F(4,85)	0.0974
Obs*R-squared	8.372465	Prob. Chi-Square(4)	0.0788

Source: Financial statements of sample banks and own computation

Table 4.4 Breusch-Godfrey Serial Correlation LM Test:

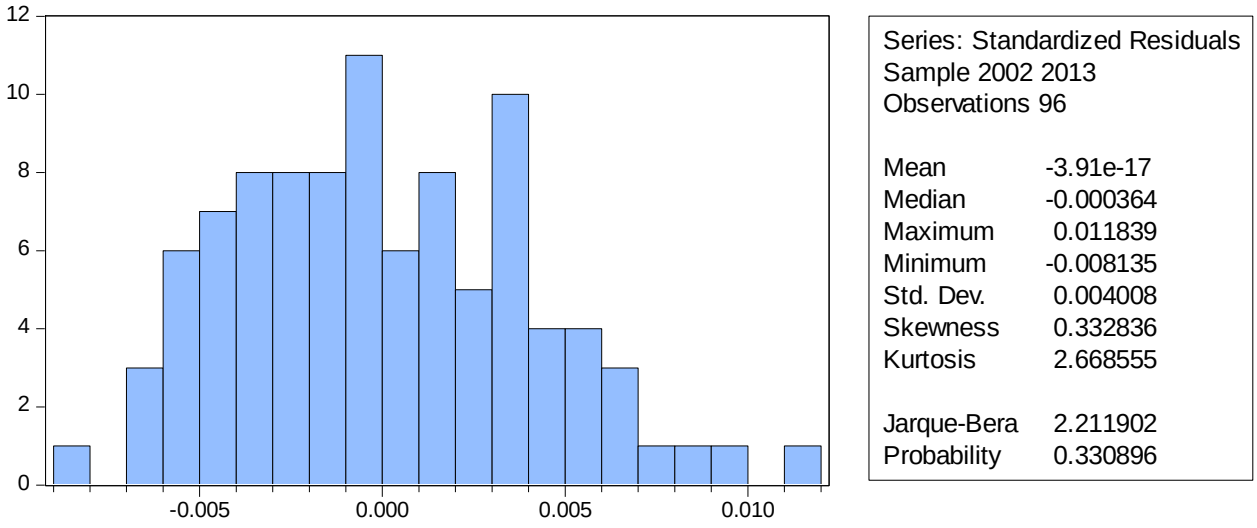
F-statistic	1.616500	Prob. F(5,84)	0.1645
Obs*R-squared	8.426357	Prob. Chi-Square(5)	0.1343

Source: Financial statements of sample banks and own computation

4.2.4 Assumption four: normality (errors are normally distributed (ut ~ N (0, σ2))

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 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, and the Bera-Jarque statistic has a P-value of 0.330896 implying that the data were consistent with a normal distribution assumption. Furthermore, it indicates that the inferences made about the population parameters from the sample parameters tend to be valid.

4.2.5 Assumption five: 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. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. However, in any practical context, the correlation between explanatory variables will be non-zero, although this will generally be relatively benign in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision.

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

Multicollinearity introduces a problem because the estimates of the sample parameters become inefficient and cause large standard errors, which makes the coefficient values and signs unreliable. Furthermore, multiple independent variables with high correlation add no additional information to the model. It also conceals the real impact of each variable on the dependent variable. Cooper & Schindler (2009) suggested that a correlation above 0.8 should be considered as a problem of multicollinearity. In addition, Hair (2006) concludede that correlation coefficient below 0.9 may not cause serious multicollinearity problem.

The first test for multicollinearity as indicated in the Annex I show the existence of Multicollinearity problem between the independent variables equity to asset ratio (EQA), total debt to asset ratio (TDA) and total debt to equity ratio (TDEQ). Hence, EQA and TDEQ dropped from the model, and hence the remaining TDA and deposit to asset ratio (DPA) used to represent banks' capital structure. After excluding the correlated variables multicollinearity test was made for the remaining independent variables.

The result of the final test for multicollinearity of this study is presented in Table 4.5 below.

Table 4.5 Correlation Matrix between independent variables

	TDA	*DPA*	*LD*	*LOG(SPR)*	*AGR*	*LOG(SIZE)*
TDA	**1.000000**					
DPA	**0.347989**	**1.000000**				
LD	**-0.265604**	**-0.441533**	**1.000000**			
LOG(SPR)	**-0.199782**	**0.172433**	**-0.649451**	**1.000000**		
AGR	**-0.167635**	**-0.108237**	**0.080373**	**-0.050093**	**1.000000**	
LOG(SIZE)	**0.423015**	**0.227919**	**-0.761712**	**0.604749**	**-0.251109**	**1.000000**

Source: Financial statements of sample banks and own computation

Table 4.5, the correlation matrix between independent variables was the method used in this study to test the existence of multicollinearity problem. Since, all correlation results are below 0.80, it indicates that multicollinearity is not potential problem for this study.

As it is clearly stated above, all assumption tests results indicated that the employed model for this study was not sensitive to the problems of violation of the CLRM assumption.

4.3 Results of the regression analysis

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 4.6, presents the Hausman specification test which suggests the fixed effects model was better than random effects model as the p-value (0.0194), 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 4.6: Correlated Random Effects - Hausman Test

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.118808	6	0.0194

Source: Financial statements of sample banks and own computation

Table 4.7: Fixed effect model estimates

Dependent Variable: NIM

Method: Panel Least Squares

Date: 05/06/15 Time: 03:01

Sample: 2002 2013

Periods included: 12

Cross-sections included: 8

Total panel (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.056808	0.014669	3.872756	0.0002*
TDA	-0.049924	0.021200	-2.354904	0.0209**
DPA	0.055023	0.012888	4.269174	0.0001*
LD	0.052479	0.003787	13.85696	0.0000*
LOG(SPR)	0.025600	0.002244	11.40700	0.0000*
AGR	0.002974	0.003001	0.990847	0.3247
LOG(SIZE)	0.002043	0.000735	2.779197	0.0068*

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.891708	Mean dependent var	0.039370
Adjusted R-squared	0.874540	S.D. dependent var	0.010188
S.E. of regression	0.003608		
Sum squared resid	0.001068		
Log likelihood	411.2974		
F-statistic	51.93942	Durbin-Watson stat	2.188048
Prob (F-statistic)	0.000000		

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

Source: Financial statements of sample banks and own computation

The fixed effect result in table 4.7 indicates that capital structure as measured by total debt to asset was statistically significant (p- value = 0.0209) at 5% level and had negative relation with profitability. Whereas, deposit to asset was strongly statistically significant (p-value = 0.0001) at 1% level and had positive relation with profitability, net interest margin.

Similarly, liquidity measured by loan to deposit was strongly statistically significant (p-value = 0.000) at 1% level and had positive relation with profitability, net interest margin. Likewise, spread was also strongly statistically significant (p-value = 0.000) at 1% level and had positive relation with profitability, net interest margin.

Besides, the fixed effect table 4.6 reveals that banks size as measured by legalism of book value total asset strongly statistically significant (p- value = 0.0068) at 1% level and had positive relation with profitability. However, growth had positive and statistically insignificant relationship with profitability with a p-value of 0.3247.

Moreover, the result shows that the adjusted R square was 0.874540 which indicates that about 87.45 % of the variability in profitability is explained by the selected explanatory variables (Total Debt to Asset, Deposit to asset, liquidity (Loan to deposit), Spread, Growth, and Size). In addition, the Prob (F-statistic) 0.000000 indicates that the explanatory variables jointly have significant impact on profitability of core business operations of commercial banks in Ethiopia.

4.3 Summary of findings

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

Total Debt to Asset Ratio:

The result of fixed effect model table 4.7 indicates that capital structure as measured by total debt to asset had negative relationship with profitability, and statistically significant (p- value = 0.0209) at 5% level, and the result was in accordance with the expected sign. As a result, the null hypothesis H1: which states there is no significant relationship between capital structure proxied by Total Debt to Asset and profitability of core business operations of commercial banks in Ethiopia was rejected. This implies that every 1 unit (birr) change (increase or decrease) in bank's capital structure (Debt ratio) keeping the other thing constant has a resultant change of 5 cents (Coeff. = -0.049924) on the profitability in the opposite direction. This result also shows that debt financing have a negative impact on profitability of the Ethiopian banking industry. Besides, the result revealed the suggestions that 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 possible reason for this result could be that the cost (interest expense) associated debt financing through non-deposit sources are expensive in the context of Ethiopia banking business operations/ environment.

The result of this study is consistent with the pecking order theory that suggests profitable firms prefer internal financing to external financing and hence profitability is expected to have negative relation with leverage (Myers & Majluf, 1984). Beside, a negative relationship between capital structure/leverage and profitability was observed in the previous empirical studies, for example, Weldemikael (2012), Rajan & Zingales (1995), Opoku et al. (2013), Shubita & alsawalhah (2012), Amidu (2007), and Taani (2013) were some of them.

Deposit to Asset ratio:

The result of fixed effect model table 4.7 indicated that Deposit to asset had positive relationship with profitability with strongly statistically significant (p-value = 0.0001)

at 1% level. And it was in accordance with the expected sign. As a result, the null hypothesis H2: which states there is no significant relationship between capital structure proxied by Deposit to Asset and profitability of core business operations of commercial banks in Ethiopia was rejected. This implies that every 1 unit (birr) change (increase or decrease) in bank's deposit to asset ratio keeping the other thing constant has a resultant change of 6 cents (Coeff. = 0.055023) on the profitability in the same direction. This result also shows that financing with deposit have a positive impact on profitability of Ethiopian banking industry. The possible reason could be that the cost (interest expense) associated debt financing through deposit mobilization is cheaper in the context of Ethiopia banking business operations/ environment. Furthermore, as per the Ethiopian profit tax law interest expenses paid to deposit customers is deductible expense for tax purpose.

The result of this study is consistent with the findings of Abbadi & Abu-Rub (2012). As the total debt of banks composed of deposit and non-deposit liabilities, this positive relationship of deposit side of debt financing is consistent with theories of capital structure. For instance, static trade off-theory states that a firm's optimal debt ratio is determined by a trade-off between the tax advantage and bankruptcy cost of borrowing, holding the firm's assets and investment plans constant. This theory assumes that higher profitability lower the expected cost of distress; hence, firms increase their leverage to take advantage from tax benefits. That is, profitability is positively related with leverage. Besides, due to the free cash flow theory of Jensen (1986) agency cost theory also supports this positive relation.

Loan to Deposit ratio:

The result of fixed effect model table 4.7 indicated that liquidity as measured by loan to deposit had positive relationship with profitability (net interest margin) and statistically significant (p-value = 0.000) at 1% level, and it was in accordance with the expected sign. As a result, the null hypothesis H3: which states there is no significant relationship between Loan to Deposit and profitability of core business

operations of commercial banks in Ethiopia was rejected. This implies that every 1 unit (birr) change (increase or decrease) in bank's loan to deposit ratio keeping the other thing constant has a resultant change of 5 cents (Coeff.= 0.052479) on the profitability (Net Interest Margin) in the same direction. This result also shows that an increase in amount of loan advances to customers from deposit financing has a positive impact on profitability of Ethiopian banking industry. The possible reason could be that the interest income associated with loan advances financed by deposit sources was greater than the costs or interest paid to depositors. The result was consistent with previous empirical findings of (Eltabakh et al., 2014).

Spread:

Likewise, the result of fixed effect model table 4.7 indicated that spread had positive relationship with profitability and statistically significant (p-value = 0.000) at 1% level, and it was in accordance with the expected sign. As a result, the null hypothesis H4: which states there is no significant relationship between Spread and profitability of core business operations of commercial banks in Ethiopia was rejected. This implies that every 1% change (increase or decrease) in bank's spread keeping the other thing constant has a resultant change of 3 cents (Coeff.= 0.025600) on the profitability in the same direction. This result also shows that an increase in the spread has a positive impact on profitability of Ethiopian banking industry. The possible reason could be due to the fact that during the period under study, the interest rates used to pay for depositors were lower than the interest rates applied on the loans and advances. The result was consistent with previous empirical findings of (Vickery, 2011) and Irungu (2013) too.

Size:

The result of fixed effect model table 4.7 reveals that banks size had positive relationship with profitability, and statistically significant (p- value = 0.0068) at 1%

level, and it was in accordance with the expected sign. As a result, the null hypothesis H6: which states there is no significant relationship between Asset size and profitability of core business operations of commercial banks in Ethiopia was rejected.

This implies that every 1% change (increase or decrease) in the banks size keeping the other thing constant had a resultant change of 0.002043 birr (Coeff. = 0.002043) on the profitability in the same direction. The results also suggested that the bigger the bank, the more economics of scale and hence more profitable as well. The possible reason is that, larger banks have economics of scale and lower variance of earnings which resulted in profitability. Besides, many previous studies indicated a similarly strong significant positive relationship, for example Goyal (2013), Shubita & alsawalhah (2012), and Arkhavien (1997) were some of them.

Table 4.8: Comparison of expected sign/impact and actual result

Category	Variables	Measurement / Ratios used	Expected sign/ impact of independent On the dependent variable	Actual result sign/ impact of independent On the dependent variable
Independent Variables	Debt to Asset	Total Debt/Total Asset	-	-
	Deposit to asset	Total Deposit/Total Asset	+	+
	Loan to Deposit	Loan/Total Deposit	+	+
	Spread	(Interest Income /Loan) - (Interest Expense/Deposit)	+	+
	Growth	% Change in Asset	+	+
	Size	Book Value of Total Asset	+	+

This chapter discussed the results of the data analysis and the discussions of these results using the appropriate method. Accordingly, the chapter discussed the descriptive statistics, the tests for the Classical Linear Regression Model (CLRM) assumptions, and through the regressions analyses; it illustrates the relationship between dependent and independent variables as well as the impact of capital structure on profitability of banks in Ethiopia. Hence, the result indicates that debt to asset ratio (leverage), deposit to asset ratio, loan to deposit ratio (liquidity), spread, and size were statistically significant factors that impacted the profitability of banks in Ethiopia. However, the result indicates that growth were not significant explanatory variable of profitability in Ethiopian banking industry. The subsequent chapter presents conclusions and recommendations of the study.

Chapter 5: Conclusion and recommendation

The earlier chapter presented the results and discussion, whereas this chapter deals with the conclusions and recommendations based on the findings of the study. Accordingly this chapter is organized into two sub-sections. Section 5.1 presents the conclusions and section 5.2 presents the recommendations in line with findings of the study.

5.1 Conclusion

The choice 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 and profitability or the value of a firm has been debatable in the field of corporate finance. The basic question is whether there exists an optimal capital structure that optimizes profitability and hence maximizes the value of a firm. Extensive research attempted to identify factors affecting profitability and capital structure as well as the impact of capital structure on profitability of firms. However, the findings of prior empirical studies have provided varying and in some cases contradicting evidence related to the impact of capital structure on profitability. Furthermore, the majority of these studies have been conducted in developed countries that have many institutional similarities. In addition, the existing studies in Ethiopia were not emphasized on the impact of capital structure on profitability of Commercial banks in the country and moreover, didn't taken into account the important variables which have great impact on profitability of core business of the banking industry.

In light of the above, the main objective of this study was to examine the impact of capital structure on profitability of core business operation of commercial banks in Ethiopia, and the relationship between leverage and profitability of commercial banks

in Ethiopian. To achieve the intended objectives the study used quantitative approaches panel data analysis methodology. The panel data were collected from audited financial statements particularly balance sheets and income statements of a sample of eight banks over the time period from 2002-2013. The collected data were analyzed by employing a fixed effect model using statistical package 'EVIEW 8.1'.

In order to conduct the empirical analysis, one dependent variable and six independent variables were selected from prominent previous research works on the impact of capital structure on profitability and by taking in to account the nature of banks operation. Net interest margin was taken as dependent variable, while the independent variables were debt to asset ratio, deposit to asset ratio, loan to deposit ratio, spread, growth and size.

It was observed that 89% of the total capital of commercial banks in Ethiopia in the period under study was made up of debt. Of this, 75% constitute deposit and the remaining was non-deposit liabilities. This has reaffirmed the fact that banks are highly levered institutions.

The results of the fixed effect estimation model showed the existence of the following relationship between profitability and six independent variables.

Capital structure/Leverage as measured by debt to asset ratio had statistically significant negative relationship with profitability, which was in line with prior expectation. This result also supports the pecking order theory and prefers using internal finance before raising debt or equity. On the other hand, deposit to asset ratio had statistically significant positive relationship with profitability, which was also in line with prior expectation. Similarly, liquidity (loan to deposit) had a positive and statistically significant relationship with profitability, which was also in line the expected sign. Furthermore, the effect of control variables on profitability of banks in this study, the result shows that as there was positive and statistically significant relationship between spread and profitability, which is in line with prior expectation.

Besides, the results of the study indicated that bank size had statistically significant positive relationship with profitability, which was consistent with prior empirical evidences and the expected sign. The result also implies that the bigger the bank, the more economics of scale and hence more profitability. However, Growth had statistically insignificant relationship with profitability of core business operations of commercial banks.

In conclusion, the finding of the study suggests that capital structure had significant impact on profitability of core business operations of commercial banks. And implies managers need to consider this impact in their financing or capital structure decision.

5.2 Recommendations

Based on the findings obtained from the results, the following recommendations were made.

In line with the results of this study banks management should pay greater attention to those significant variables in determining their optimal capital structure and optimize level of profitability of their core business operations and hence, wealth of shareholders.

The managements of banks should also place greater emphasis on rising equity capital through retain earnings and /or issuing shares of stocks in order to obtain sufficient capital in financing their core business operations and to expand their branch network which in turn creates greater market share and profitability. And hence, advised to reduce non-deposit source of debt financing.

In addition, taking in to account the effect of equity capital on profitability and stability of banks in the country, the policy maker, National Bank of Ethiopia also

recommended reconsidering to raise the minimum capital requirement for banks. This also supported due to the fact that, while Ethiopia's new minimum capital requirement is higher than that of East African neighbors such as Kenya, Tanzania, and Uganda, it is lower than the minimum capital requirement for banks in Ghana, Zambia (foreign banks), and Nigeria (Ecobank, 2014)

Moreover, the management of banks should give due attention on deposit mobilization strategies so that to mobilize more fund in financing its core business operations and assets.

Furthermore, banks management should give due consideration to manage their debts in a way that reduce its negative impact on profitability of core business operations, and increase loan advances keeping the profitability of their loan portfolio in line with prescribed objectives and hence generate more interest income from loan advances.

Besides, the commercial banks also recommended developing strategies that will increase spread without affecting their competitive base in the banking business industry. Similarly, increase bank size and manage efficiently taking in to account the economics of scale benefit of bank size.

Finally, this study examined the impact of capital structure on profitability of core business operations of banks in Ethiopia using net interest margin as dependent variable and some of the measures of capital structure as independent variables. Thus, future researcher may address limitations by including internal variables such as equity to asset ratio and debt to equity ratio as well as external variable like inflation and GDP as control variables, so that to demonstrate the impact of other measure of capital structure and capital adequacy as well as external variables on the profitability of banks. Furthermore, future researcher may assess the impact of capital structure on the overall performance of banking industry and other sectors of the economy too.

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Annex I: Correlation Matrix

	EQA	TDEQ	TDA	DPA	LD	LOG (SPR)	AGR	LOG (SIZE)
EQA	1.000000							
TDEQ	-0.856934	1.000000						
TDA	-0.978240	0.837667	1.000000					
DPA	-0.331933	0.196904	0.347989	1.000000				
LD	0.257949	-0.339263	-0.265604	-0.441533	1.000000			
LOG (SPR)	0.220836	-0.161311	-0.199782	0.172433	-0.649451	1.000000		
AGR	0.165560	-0.142726	-0.167635	-0.108237	0.080373	-0.050093	1.000000	
LOG (SIZE)	-0.407443	0.498599	0.423015	0.227919	-0.761712	0.604749	-0.251109	1.00000

Source: Financial statements of sample banks and own computation

The above table shows the Multicollinearity between the independent variables EQA, TDA and TDEQ. Hence, EQA and TDEQ dropped and the remaining TDA and DPA used to represent banks' capital structure.

Annex II: Panel data

YEAR	FIRM	NIM	TDA	EQA	TDEQ	DPA	LD	SPR	SIZE	AGR
2002	1	0.00950	0.96257	0.03743	25.71411	0.83672	0.52623	0.03878	22,146.00	0.03057
2003	1	0.02006	0.94723	0.05277	17.95067	0.81661	0.43280	0.06563	24,200.00	0.09275
2004	1	0.01758	0.94652	0.05348	17.69987	0.80540	0.36949	0.06979	27,975.00	0.15599
2005	1	0.01732	0.95692	0.04308	22.21134	0.76478	0.37671	0.05613	33,169.00	0.18567
2006	1	0.01879	0.95799	0.04201	22.80412	0.78903	0.32864	0.08009	35,849.00	0.08080
2007	1	0.02079	0.90289	0.09711	9.29763	0.75647	0.29687	0.09548	43,456.00	0.21220
2008	1	0.02550	0.90955	0.09046	10.05520	0.74645	0.46072	0.07469	50,416.00	0.16016
2009	1	0.03664	0.91515	0.08484	10.78632	0.73200	0.48072	0.09866	59,411.00	0.17842
2010	1	0.03320	0.92512	0.07488	12.35498	0.73660	0.43950	0.10059	74,187.00	0.24870
2011	1	0.03165	0.94520	0.05480	17.24870	0.74212	0.42431	0.10026	114,265.00	0.54023
2012	1	0.03681	0.95130	0.04864	19.55928	0.73409	0.53450	0.09320	158,814.00	0.38988
2013	1	0.04131	0.95435	0.04589	20.79611	0.77312	0.46950	0.11774	197,104.00	0.24110
2002	2	0.02261	0.91962	0.08038	11.44156	0.62944	1.19569	0.01519	958.00	-0.01033
2003	2	0.02854	0.91614	0.08386	10.92405	0.65287	1.14959	0.02767	942.00	-0.01670
2004	2	0.02260	0.92148	0.07852	11.73494	0.64711	1.07164	0.02533	1,057.00	0.12208
2005	2	0.01895	0.94214	0.05786	16.28302	0.57642	0.81155	0.03401	1,832.00	0.73321
2006	2	0.04217	0.91263	0.08737	10.44586	0.54146	1.21172	0.05167	1,797.00	-0.01910
2007	2	0.05494	0.88777	0.11223	7.91038	0.60138	1.16989	0.06728	1,889.00	0.05120
2008	2	0.03786	0.89157	0.10827	8.23456	0.62260	0.93133	0.06916	2,392.00	0.26629
2009	2	0.05339	0.89628	0.10383	8.63219	0.70752	0.85769	0.05975	2,592.00	0.08367
2010	2	0.03786	0.89872	0.10128	8.87352	0.74467	0.74277	0.06628	3,162.00	0.21971
2011	2	0.03786	0.89641	0.10359	8.65331	0.71534	0.68879	0.06761	3,505.00	0.10855
2012	2	0.02498	0.91949	0.08053	11.41777	0.59146	0.51269	0.07494	5,947.00	0.69667
2013	2	0.02214	0.90070	0.09930	9.07031	0.61163	0.47950	0.08235	6,699.00	0.12661
2002	3	0.03347	0.91790	0.08210	11.18033	0.80148	0.73216	0.05808		0.35091

									1,486.00	
2003	3	0.03125	0.93521	0.06479	14.43411	0.81416	0.78162	0.04621	1,991.00	0.33984
2004	3	0.03447	0.93575	0.06425	14.56395	0.81360	0.77594	0.05041	2,677.00	0.34455
2005	3	0.04065	0.92895	0.07105	13.07407	0.82836	0.78786	0.05423	3,420.00	0.27755
2006	3	0.04682	0.91509	0.08491	10.77720	0.81214	0.85699	0.05834	4,546.00	0.32924
2007	3	0.04868	0.90987	0.09013	10.09458	0.80467	0.82041	0.06111	6,041.00	0.32886
2008	3	0.03805	0.90673	0.09333	9.71572	0.78578	0.71234	0.06950	7,829.00	0.29591
2009	3	0.03805	0.90663	0.09337	9.71051	0.81430	0.56169	0.07250	9,733.00	0.24321
2010	3	0.02678	0.90907	0.09093	9.99694	0.82120	0.49769	0.07113	12,353.00	0.26928
2011	3	0.02750	0.90475	0.09525	9.49826	0.80774	0.52507	0.06962	14,660.00	0.18670
2012	3	0.03687	0.89568	0.10433	8.58498	0.80283	0.57757	0.08134	17,520.00	0.19511
2013	3	0.03508	0.89641	0.10359	8.65302	0.80271	0.55909	0.08428	19,747.00	0.12712
2002	4	0.03796	0.88219	0.11781	7.48855	0.83633	0.68495	0.06458	1,112.00	0.22602
2003	4	0.02625	0.90221	0.09779	9.22628	0.83084	0.68729	0.05016	1,401.00	0.25989
2004	4	0.02710	0.91243	0.08757	10.41935	0.84350	0.63362	0.05179	1,770.00	0.26338
2005	4	0.03343	0.89757	0.10243	8.76316	0.87152	0.66495	0.05534	2,226.00	0.25763
2006	4	0.03648	0.89709	0.10291	8.71711	0.86899	0.72926	0.05448	2,954.00	0.32704
2007	4	0.05185	0.88668	0.11319	7.83391	0.81253	0.80720	0.06547	3,830.00	0.29655
2008	4	0.04260	0.87612	0.12388	7.07206	0.80277	0.70755	0.06428	4,820.00	0.25854
2009	4	0.03666	0.88327	0.11676	7.56476	0.77265	0.54671	0.07770	6,423.00	0.33242
2010	4	0.02907	0.88164	0.11836	7.44897	0.76855	0.51518	0.07105	7,945.00	0.23701
2011	4	0.03666	0.87070	0.12932	6.73282	0.76551	0.51480	0.07196	10,116.00	0.27326
2012	4	0.04012	0.86509	0.13491	6.41259	0.77110	0.59804	0.09052	11,937.00	0.18001
2013	4	0.04368	0.94680	0.13535	6.99523	0.81572	0.61458	0.08655	14,859.00	0.24480
2002	5	0.04084	0.87653	0.12347	7.09929	0.79597	0.73597	0.05976	1,142.00	0.27455
2003	5	0.03665	0.88822	0.11178	7.94631	0.80720	0.75186	0.05154	1,333.00	0.16725
2004	5	0.05384	0.87823	0.12177	7.21244	0.80442	0.75451	0.07809	1,585.00	0.18905
2005	5	0.05046	0.87652	0.12348	7.09843	0.79096	0.75845	0.06481		0.29779

									2,057.00	
2006	5	0.05725	0.85815	0.14185	6.04975	0.76817	0.90170	0.06522	2,834.00	0.37773
2007	5	0.05136	0.88124	0.11867	7.42605	0.80124	0.84712	0.06558	3,396.00	0.19831
2008	5	0.05110	0.90162	0.09829	9.17333	0.81448	0.81005	0.06274	4,270.00	0.25734
2009	5	0.04662	0.90519	0.09481	9.54764	0.82061	0.60277	0.07691	5,477.00	0.28260
2010	5	0.03550	0.90676	0.09324	9.72528	0.81835	0.61361	0.05828	6,280.00	0.14661
2011	5	0.04415	0.90916	0.09079	10.01399	0.83475	0.54577	0.08527	7,278.00	0.15900
2012	5	0.04683	0.89000	0.11003	8.08869	0.82183	0.57556	0.09686	8,240.00	0.13212
2013	5	0.04662	0.89369	0.10935	8.17282	0.83876	0.55344	0.08127	10,129.00	0.22937
2002	6	0.04681	0.90093	0.09907	9.09375	0.79721	0.78835	0.06461	646.00	0.10806
2003	6	0.03516	0.89539	0.10461	8.55914	0.79190	0.81108	0.04941	889.00	0.37616
2004	6	0.05200	0.88684	0.11316	7.83721	0.76842	0.84247	0.06888	1,140.00	0.28234
2005	6	0.04290	0.88861	0.11139	7.97778	0.79703	0.77795	0.06276	1,616.00	0.41754
2006	6	0.04617	0.88712	0.11288	7.85882	0.78707	0.89595	0.05564	2,259.00	0.39790
2007	6	0.04550	0.88405	0.11580	7.63400	0.78261	0.79126	0.06565	3,480.00	0.54050
2008	6	0.04999	0.85322	0.14678	5.81298	0.71913	0.79114	0.07129	4,125.00	0.18531
2009	6	0.04717	0.83658	0.16342	5.11935	0.72844	0.56657	0.08817	5,118.00	0.24084
2010	6	0.04536	0.81683	0.18317	4.45954	0.68318	0.63064	0.08064	5,742.00	0.12184
2011	6	0.04415	0.83409	0.16590	5.02761	0.73905	0.48847	0.09138	8,061.00	0.40389
2012	6	0.04812	0.80782	0.19218	4.20353	0.68984	0.61924	0.09957	8,347.00	0.03549
2013	6	0.05093	0.82387	0.17611	4.67825	0.72646	0.62116	0.10200	10,394.00	0.24519
2002	7	0.04867	0.71975	0.28025	2.56818	0.60191	0.86243	0.07255	314.00	0.46729
2003	7	0.03611	0.80597	0.19403	4.15385	0.61194	1.01045	0.04461	469.00	0.49363
2004	7	0.04127	0.85757	0.14243	6.02083	0.78932	0.72180	0.04964	674.00	0.43710
2005	7	0.03284	0.88350	0.11650	7.58400	0.80615	0.68555	0.05792	1,073.00	0.59199
2006	7	0.03587	0.88055	0.11945	7.37173	0.76298	0.82295	0.04695	1,599.00	0.49021
2007	7	0.04366	0.83528	0.16495	5.06389	0.70607	0.91499	0.06057	2,183.00	0.36492
2008	7	0.04781	0.85613	0.14394	5.94794	0.75181	0.76111	0.06631		0.48910

									3,250.00	
2009	7	0.04420	0.88836	0.11178	7.94727	0.77730	0.59524	0.07336	4,652.00	0.43131
2010	7	0.04475	0.89187	0.10813	8.24823	0.80133	0.55316	0.07397	5,896.00	0.26754
2011	7	0.03938	0.88330	0.11667	7.57083	0.78516	0.54023	0.07953	7,726.00	0.31026
2012	7	0.04960	0.87462	0.12538	6.97562	0.76905	0.60457	0.09755	8,787.00	0.13737
2013	7	0.04465	0.87962	0.12038	7.30679	0.80815	0.58421	0.09704	9,978.00	0.13552
2002	8	0.04524	0.81461	0.18539	4.39394	0.64607	0.93913	0.06052	534.00	0.58929
2003	8	0.03835	0.85876	0.14124	6.08000	0.66441	0.93537	0.04857	885.00	0.65730
2004	8	0.04275	0.86127	0.13873	6.20809	0.66720	0.94471	0.05322	1,247.00	0.40904
2005	8	0.04419	0.87067	0.12933	6.73214	0.70612	0.92641	0.05363	1,732.00	0.38893
2006	8	0.04392	0.85940	0.14060	6.11228	0.71633	1.01584	0.04982	2,027.00	0.17032
2007	8	0.05075	0.83698	0.16302	5.13412	0.72075	0.96700	0.05855	2,607.00	0.28614
2008	8	0.05002	0.83614	0.16386	5.10264	0.67667	0.85582	0.07416	3,650.00	0.40012
2009	8	0.05002	0.84837	0.15163	5.59489	0.68582	0.67355	0.09143	4,807.00	0.31681
2010	8	0.04788	0.84649	0.15351	5.51442	0.69126	0.61692	0.08285	5,971.00	0.24217
2011	8	0.04850	0.83541	0.16461	5.07501	0.72522	0.53642	0.09716	7,112.00	0.19111
2012	8	0.04612	0.81537	0.18463	4.41622	0.70545	0.63529	0.09090	8,276.00	0.16370
2013	8	0.05489	0.81782	0.18218	4.48916	0.72778	0.68262	0.09779	9,145.00	0.10499

Annex III: Capital and Branch Network of the Banking System

(Branch in Number and Capital in Millions of Birr)

Banks	Branch Network				Capital		Sample Banks Market Share (%)	
		2012/13			2012/13		Branch Network	Capital
	Regions	Addis Ababa	Total	% Share	Total Capital	% Share		
1. Public Banks								
Commercial Bank of Ethiopia	595	137	732	42.4	9,027.00	38.7	42.4	38.7
Construction & Business Bank	63	42	105	6.1	465	2	6.1	2.0
Development Bank of Ethiopia	31	1	32	1.9	2,554.00	10.9		
Total Public Banks	**689**	**180**	**869**	**50.3**	**12,046.00**	**51.6**		
2. Private Banks								
Awash International Bank	47	67	114	6.6	1,628.00	7	6.6	7.0
Dashen Bank	59	53	112	6.5	1,493.00	6.4	6.5	6.4
Abyssinia Bank	41	45	86	5	909	3.9	5.0	3.9
Wegagen Bank	38	41	79	4.6	1,570.00	6.7	4.6	6.7
United Bank	30	45	75	4.3	951	4.1	4.3	4.1
Nib International Bank	30	42	72	4.2	1,453.00	6.2	4.2	6.2
Cooperative Bank of Oromiya	62	12	74	4.3	549	2.4		
Lion International Bank	23	22	45	2.6	415	1.8		
Oromia International Bank	44	21	65	3.8	490	2.1		
Zemen Bank	3	5	8	0.5	400	1.7		
Buna International Bank	20	13	33	1.9	321	1.4		
Berhan International Bank	11	11	22	1.3	340	1.5		
Abay Bank	37	10	47	2.7	300	1.3		
Addis International Bank	2	9	11	0.6	205	0.9		
Debub Global Bank	10	4	14	0.8	114	0.5		
Enat Bank	0	2	2	0.1	162	0.7		
Total Private Banks	**457**	**402**	**859**	**49.7**	**11,300.00**	**48.4**		
Grand Total Banks	**867**	**582**	**1728**	**100**	**23,346.00**	**100**	**79.7**	**75.0**

Source: National Bank of Ethiopia report (2013/2014)