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The Impact of Capital Structure on Profitability of Commercial Bank of Ethiopia

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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 bank of Ethiopia. In order to meet the objectives of this study a quantitative panel data methodology was employed. The data were obtained from the audited financial statements of the commercial bank of Ethiopia, from National Bank of Ethiopia for the period of 5 years (2009 – 2013). The data fixed effect estimation model was applied for the data analysis through SPSS statistical package. It was observed that 94% of the total capital of commercial bank of 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 CBE is highly levered institution. The findings revealed that capital structure as measured by total debt to asset had statistically significant insignificant, though it has postive 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, The bank should give due consideration to manage its debt properly, mobilize deposit sufficiently, increase loan advances, spread, and size in their financing decisions. Furthermore, it is 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 the bank. 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.
Keywords: Banks, Capital structure, Profitability, core business operation

Chapter one

1.1 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 Bank in Ethiopia" with an emphasis on the profitability of core business operation and only considers the case of commercial bank of Ethiopia .

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 is to examine the impact of financing decision /capital structure on profitability of commercial bank of Ethiopia with an emphasis on core business operation 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.

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 is 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 is no studies found related to this title "The Impact of Capital Structure on Profitability of banks the case of Commercial Bank of Ethiopia" with an emphasis on the core business operations profitability of commercial bank of Ethiopia.

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 bank of Ethiopia by emphasizing on its' core business operation profitability.

Hence, the aim of this study is to examine the impact of leverage/capital structure on profitability of commercial bank of Ethiopia with an emphasis on the bank core business operations as it is defined as the bank operation 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 other researchers, for further research to conduct in considering the minimum capital requirement of banks operating in the country.

1.2. Objectives of the Study

The general objective of this study is to examine the impact of capital structure on profitability of commercial bank of Ethiopia, with an emphasis on performance of core business operation of the bank.

In addition to the above general objective, the study will have the following specific objectives:

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

1.3. Research Questions

The research will able to give answer to the following research questions at the end of the intended studies. The research questions are established as follows.

1. What is the nature of relationship between capital structure proxy by Total Debt to Asset and profitability of core business operations of commercial bank of Ethiopia?
2. What is the nature of relationship between capital structure proxy by Deposit to Asset and profitability of core business operations of commercial banks of Ethiopia?
3. What is the nature of relationship between Loan to Deposit and profitability of core business operations of commercial bank of Ethiopia?
4. What is the nature of relationship between Spread and profitability of core business operations of commercial bank of Ethiopia?
5. What is the nature of relationship between growth and profitability of core business operations of commercial bank of Ethiopia?
6. What is the nature of relationship between Asset size and profitability of core business operations of commercial bank of Ethiopia?

1.4. Scope and Limitation of the Study

The scope of this study will be limited to the examination of the impact of capital structure on profitability of core

business operation of commercial bank of Ethiopia over the period of 5 years (20011/12 to 2015/16). In order to make generalization from sample to population, and to increase number of observation of the study, a combination of the maximum number years in which audited financial statements available will be taken into account. As a result, the researcher will be made by taking 5 years sample data of the Commercial Bank of Ethiopia which have been operating and provided audited financial statements during the period of 2011/12 to 2015/16 to the NATIONAL BANK OF ETHIOPIA, which act as a financial regulatory authority of the nation . To meet its objectives, the study will be 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 will be Net interest margin (as a measure of profitability of core business operations of banks). The major limitation that could possibly hinder the study is absence of active secondary market which forced the researcher to measure the dependent variable as well as the proxy 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 commercial bank of 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 reference for other researchers in the area of corporate finance.

1.6. 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 will be found to be appropriate for this study. Hence, to meet the objectives of this study, explanatory research design will be employed. Besides, this study will 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). Therefore,5 years data (2011/12 to 2015/16) will be used. This data will have the advantage of giving more informative data as it consists of the time-series information that reflects its dynamic natures of the data.

1.6.1. Population, Sampling Technique and Sample Size

When the population is becoming significantly large, it might able to hamper the data collection process, this research will be conduct only to the commercial bank of Ethiopia . Therefore the required secondary data will be collected either from national bank of Ethiopia(NBE) and also an interview will be made with the CBE financial director to obtain key informant discussion regarding with their overall financial decisions, They have the characteristics that are important to the study.

1.6.2. Data Analysis Method

To achieve the objectives the study, 5 years financial recorded data of commercial bank of Ethiopia for twelve years (2011/12 to 2015/16) will be used. This is because of the ability of time-series information to capture dynamic natures of the data. And hence it ensures more degrees of freedom, more efficiency, and less collinearity among variables (Gujarati, 2004).

The collected data will be analyzed using the descriptive statistics and regressions, the analysis will be made using SPSS version 20 software,. In the analysis of the descriptive statistics, the mean, standard deviation, maximum and minimum values will be used to analyze the trends of the data. Therefore, the regression result will be 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.

1.6.2.1. Variables description

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

1.6.2.1.1.Dependent Variable

Net interest margin (NIM)

Net Interest Margin (NIM) will be 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 the bank intermediation service 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 we will use to calculate the NIM is;

$$\textbf{Net incoming margin } (NIM) = \frac{\textbf{Interest income} - \textbf{Interest expense}}{\textbf{Interest earningt asset}}$$

1.6.2.1.2. Independent Variables

Total Debt to Asset (TDA)

The total debt to asset variable will be use to represent the proportion of the bank asset/operation financed by debt, hence it will use as one measure of the capital structure of the bank. 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. For the purpose of this study it will be calculated as:

$$\textbf{Total dept to asset } (TDA) = \frac{\textbf{Total debt}}{\textbf{Total asset}}$$

Deposit to asset (DPA)

As the major source of external finance is deposits, deposit to asset ratio will be used as an independent variable to examine the impact of deposit on profitability of commercial bank of Ethiopia. Since the total debt of the bank composed of deposit and non-deposit liabilities, this variable intended to show the impact deposit financing and hence the non-deposit financing decision on profitability.
The formula that will be used to calculate this variable is;

$$\textbf{Deposit to asset } (DPA) = \frac{\textbf{Total deposit}}{\textbf{Total asset}}$$

Loan to Deposit (LD)

The Loan to deposit (LD) ratio serves as bank liquidity measure. It measures the funds that the bank 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.
Loan to deposit will be calculated as:

$$\textbf{Loan to deposit } (LD) = \frac{\textbf{Total loan}}{\textbf{Deposit}}$$

Spread (SPR)

The purpose of this variable in this study is 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 formula that will be used to calculate is:

$$\textbf{Spread } (SPR) = \frac{\textbf{Interest income} - \textbf{Interest paid}}{\textbf{Loan } \& \textit{ advanced deposit}}$$

Growth (AGR)

This variable included in the study to serve as a control variable. Percentage change in the banks' asset has been used as a proxy for growth. 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 bank is considered in this study as a control variable. In addition to its role as a control variable, size will be introduced to determine whether economies or diseconomies of scale exist in the banking sector of Ethiopia. For the purpose of this study, bank size will be taken as the natural logarithm of the book value of total assets of the bank. 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.

1.7. Organization of the Study

This thesis will organize 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 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).

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.

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 earnings per share.

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:

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.

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 bank of Ethiopia by using net interest margin (NIM) as measure of profitability of the core business operations of the bank, 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, which provides sufficient information regarded with 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).

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, 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 commercial bank of Ethiopia capital structure and profitability indicator variable was obtained from audited financial statements of the respective bank. Thus, the data were collected from National Bank of Ethiopia (NBE) and from the respective commercial bank. 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 only investigate data on the commercial bank of Ethiopia, up on the past five years (2009 to 2013) resulted.

3.3. Sampling design

The population of the study was all commercial bank 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. to meet the desired objective of this study and to make generalization from sample 5 years, the researcher used Until the date of data collection for this study, financial data regarding 2015 were not available due to the merger process of CBE with CDBE,so that the bank were not finalized and submitted its audit report for the year 2014/15 to the National Bank of Ethiopia (NBE). As a result, the year 2014/15 data were excluded and we commence the research from 2009.

3.4. Data analysis method

To achieve the objectives the study, panel data of commercial bank of Ethiopia for five years (2009/2013) was used. This is because of that panel data has the advantage of giving more informative data as it consists of the time-series information, which captures dynamic natures of the data. And hence it ensures, more efficiency, and less co linearity among variables (Gujarati, 2004).

Using statistical package spss software, the collected panel data was analyzed using the descriptive statistics and linier correlation.

In the analysis of the descriptive statistics, the mean, standard deviation, maximum and minimum values were used to analyze the trends of the data.Therefore, the linear correlation coefficient were 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 we will use to calculate the NIM is;

$$\textbf{\textit{Net interest margin}}\ (\textbf{\textit{NIM}}) = \frac{\textbf{\textit{Interest income}} - \textbf{\textit{Interest expense}}}{\textbf{\textit{Interest earning asset}}}$$

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:

$$\textbf{\textit{Total debt to asset}}\ (\textbf{\textit{TDA}}) = \frac{\textbf{\textit{Total debt}}}{\textbf{\textit{Total asset}}}$$

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;

$$\textbf{Deposit to Asset } (DPA) = \frac{\textbf{Total deposit}}{\textbf{Total asset}}$$

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.

$$\textbf{Load deposit} = \frac{\textbf{Total loan}}{\textbf{Deposit}}$$

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:

$$\textbf{Spread} = \frac{\textbf{Interest income} - \textbf{Interest paid}}{\textbf{Loan} \,\&\, \textit{Advanced deposit}}$$

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.

$$\textbf{Asset growth} = \frac{\textbf{asset of current year} - \textbf{asset of previous year}}{\textbf{asset of current year}}$$

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 that of the book value of total assets of the bank. 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.

3.6. The research question

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 bank of Ethiopia and to scrutinize the relationship between capital structure variables and profitability. To achieve this objective, the following research questions were been raised, in relation with the impact of capital structure on profitability of core business operations of Commercial bank of Ethiopia were tested.

1. What is the nature of relationship between capital structure proxy by Total Debt to Asset and profitability of core business operations of commercial bank of Ethiopia?
2. What is the nature of relationship between capital structure proxy by Deposit to Asset and profitability of core business operations of commercial banks of Ethiopia?
3. What is the nature of relationship between Loan to Deposit and profitability of core business operations of commercial bank of Ethiopia?
4. What is the nature of relationship between Spread and profitability of core business operations of commercial bank of Ethiopia?
5. What is the nature of relationship between growth and profitability of core business operations of commercial bank of Ethiopia?
6. What is the nature of relationship between Asset size and profitability of core business operations of commercial bank of 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.

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

Variables	Mean	Maximum	Minimum	Std. Dev.	CORROLTION COEFFICENT
NIM	0.03562	0.0413	0.03	0.00476	
TDA	0.938	0.954	0.915	0.0153	0.11311681
DPA	0.745	0.773	0.732	0.0151	0.40939337
LD	0.4688	0.5345	0.42	0.0391	0.325392952
SPR	0.0142	0.0158	0.01	0.00382	0.904070018
AGR	0.235	0.351	0.151	0.0716	-0.57142
SIZE	**120756.3**	197104.2	59411	51,481.11	0.415018

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 0.03562 or 3.5% and standard deviation 0.00476 or 0.476%. This means commercial bank of Ethiopia, under the period of study, earned on average 3.5% net interest margin from its investment in interest earning assets. This also means that on average, for each one birr investment in the interest earning asset of commercial bank of Ethiopia there was 0.036 cent return in the form of net interest income. The

highest NIM for a bank in a particular year was 0.0413 or 4.13% and in the same way the minimum ratio for a bank in a year was 0.03 or 3%. Regarding the standard deviation, it means that the value of net interest margin can deviate from its mean to both sides by 0.476%.

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 0.938 or 93.8%. It reveals that debt represents nearly 94% of the capital of commercial banks in Ethiopia. The highest debt ratio for a bank in a particular year was 0.954 or 95.4% and in the same way the minimum ratio for a bank in a year was 0.915 or 91.5%. The value of debt to asset ratio can deviate from its mean to both sides by 0.0153 or 1.53%. From the summary of statistics it was observed that 93.8% 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 0.745 or 74.5%. It reveals that total deposit represents on average nearly 75% of assets of commercial bank of Ethiopia. The highest deposit to asset ratio for a bank in a particular year was0.773 or 77.3 % and in the same way the minimum ratio for a bank in a year was 0.732 or 73.2%. The value of deposit to asset ratio can deviate from its mean to both sides by 0.0151 or 1.51%.

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 0.4688 or 46.88%. It reveals that loan represents on average nearly 47% of deposit of commercial bank of Ethiopia. The highest loan to deposit ratio for a bank in a particular year was 0.5345 or 53.45% and this reveals that banks loan advances to customers from deposit and non-deposit sources of finance. In the same way the minimum ratio for a bank in a year was 0.42 or 42%. The value of loan to deposit ratio can deviate from its mean to both sides by0.0391 or 3.91%.

Moreover, the descriptive statistics shows that the average value of the growth variable which represented by percentage change in asset was 0.235 or 23.5 %. This implies that on average the commercial bank of ethiopia asset increased by 23.5 % over the study period. The maximum value of growth for the study period was 0.351 or 35.1% and the minimum value was 0.151 or 15.1%. The value of asset growth can deviate from its mean to both sides by 0.0716 or 0.72%.

Likewise, the mean of the firms' size which was represented by the book value of total assets was Birr **120756.3** (in million) with a standard deviation of Birr51, 481.11 (in million). Total assets for the sample banks in the study period were ranged from Birr 59411 (in million) to Birr 197104.2 (in million). And this highest asset size was observed in the balance sheet of 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 the year 2009. The possible reason could be the year 2009 was its infant stage in the banking business operation.

4.2. 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. As a result, the 1st research question R1: which pose its question as, What is the nature of relationship between capital structure proxy by Total Debt to Asset and profitability of core business operations of commercial bank of Ethiopia? there is no significant relationship between capital structure proxy by Total Debt to Asset and profitability of core business operations of commercial banks of Ethiopia were been exhibited. This implies that every 1 unit (birr) change (increase or decrease) in the bank's capital structure (Debt ratio) keeping the other thing constant has a resultant change of 10 cents (Coeff. = 0.11311681) on the profitability in the same direction. This result also shows that debt financing have a little impact on profitability of the commercial bank of Ethiopian, though it is positively correlated, the change is not proportinal. Besides, the result revealed the suggestions that even though, the bank 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 the commercial bank of Ethiopia 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 low level of relation have been exhibited with leverage (Myers & Majluf, 1984).

Deposit to Asset ratio

The result also indicated that Deposit to asset had positive relationship with profitability level. And it was in accordance with the expected sign. As a result, the 2nd research question R2: which intend to find answer for, what is the nature of relationship between capital structure proxy by Deposit to Asset and profitability of core business operations of commercial banks of Ethiopia? There is significant relationship between capital structure proxy by Deposit to Asset and profitability of core business operations of commercial bank of Ethiopia were been shown. 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 40 cents (Coeff. = 0.40939337) 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 has shown that, 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 indicated that liquidity as measured by loan to deposit had positive relationship with profitability (net interest margin). As a result, the 3rd research question R3: What is the nature of relationship between capital structure proxy by Loan to Deposit ratio and profitability of core business operations of commercial banks of Ethiopia? The research shows that, there is a significant relationship between Loan to Deposit and profitability of core business operations of commercial banks in Ethiopia. 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 32 cents (Coeff.= 0.325392952) 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 the CBE. 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 indicated that spread had positive relationship with profitability it was in accordance with the expected sign. As a result, the null hypothesis R4: which pose its question as, what is the nature of relationship between capital structure proxy by spread of Asset to profitability of core business operations of commercial banks of Ethiopia? Finding has been showing that, there is a significant relationship between Spread and profitability of core business operations of commercial banks in Ethiopia. This implies that every 1% change (increase or decrease) in bank's spread keeping the other thing constant has a resultant change of 90cents (Coeff.= 0.904070018) on the profitability in the same direction. This result also shows that an increase in the spread has perfectly correlated and it 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 R5: 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 0.415018 birr (Coeff. = 0.415018) 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.

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 Correlation Model (CLCM) 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 'SPSS'.

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 94% 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 CBE 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

(In percent)					
	2009	**2010**	**2011**	**2012**	**2013**
Description					
Return on Assets	3.50	2.95	3.04	3.98	3.43
Return on Equity	40	37	48	77.71	72.83
Profit Margin	50	44	41	46.95	43.73
Gross yield on Asset	7	7	7	8.48	7.85
Interest income /Av.Assets	4	4	4	4.91	5.36
Non Interest Income/Av. Assets	3	3	3	3.57	2.49
Equity Multiplier	11	13	16	19.53	21.22
Net Interest Margin	4	3	3	3.68	4.13
Speard	2	1	1	1.52	1.58
Efficiency Ratio	288	186	178	247.75	158.83
Non interst income/Gross Revenue	39	39	42	42.08	31.69
Interest income/Gross Revenue	61	61	58	57.92	68.31
Non interst expense/Gross revenue	13	21	23	16.99	19.95
Salary & benefit/Non Interest Expense	63	46	34	44.43	47.87
Liquid Assets/Deposits	36	29	36	21.53	23.30
Liquid Assets/Total assets	26	21	26	15.80	18.01
Loan to total deposit	48	44	42	53.45	46.95

(In decimal)					
	2009	**2010**	**2011**	**2012**	**2013**
Description					
Return on Assets	0.035	0.0295	0.0304	0.0398	0.0343
Return on Equity	0. 4	0.37	0. 48	0.78	0.73
Profit Margin	0. 5	0.44	0.41	0.47	0.437
Gross yield on Asset	0.07	0.07	0.07	0.0848	0.0785
Interest income /Av.Assets	0.04	0.0 4	0.0 4	0.0491	0.0536
Non Interest Income/Av. Assets	0.03	0.0 3	0.0 3	0.0357	0.0249
Equity Multiplier	0.11	0.13	0.16	0.1953	0.2122
Net Interest Margin	0.0 4	0.03	0.03	0.0368	0.0413
Speard	0.0 2	0.01	0.01	0.0152	0.0158
Efficiency Ratio	288	186	178	247.75	158.83
Non interst income/Gross Revenue	0.39	0.39	0.42	0.4208	0.3169
Interest income/Gross Revenue	0. 61	0.61	0.58	0.5792	0.6831
Non interst expense/Gross revenue	0. 13	0.21	0.23	0.1699	**0.** 1995
Salary & benefit/Non Interest Expense	0. 63	0.46	0.34	0.4443	**0.**4787
Liquid Assets/Deposits	0. 36	0.29	0.36	0.2153	0.2330
Liquid Assets/Total assets	0. 26	0.21	0.26	0.1580	0.1801
Loan to total deposit	0. 48	0.44	0.42	0.5345	0.4695

Total debt

54,371	68,632	108,003	151,080	188,106
0.915	0.925	0.945	0.951	0.95

Total asset

	2008	**2009**	**2010**	**2011**	**2012**	**2013**
Total asset	**50,416**	**59,411**	**74,187**	**114,265**	**158,814**	**197,104**
Total deposit		**43,489**	**54,646**	**84,799**	**116,584**	**152,386**
DPA		0.732	0.737	0.742	0.734	0.773
Total debt		54,371	68,632	108,003	151,080	188,106
TDA		0.915	0.925	0.945	0.951	0.954
AGR		0.151	0.199	0.351	0.281	0.194