Determinants of Commercial Banks Profitability: An Empirical Study on Private Commercial Banks in Ethiopia

By:

Dawit Belete

Advisor:

Sewale Abate (Phd)

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Addis Ababa University

College of Business and Economics

Department of Accounting and Finance

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Statement of Declaration

I, Dawit Belete Gebre, hereby declare that this thesis entitled "Determinants of Commercial Banks Profitability: An Empirical Study on Private Commercial Banks in Ethiopia" submitted by me for the award of the degree of Master of Accounting and Finance, to Addis Ababa University at Addis Ababa, Ethiopia, is my original work and it has never been presented in any university. All sources and materials used for this thesis have been duly acknowledged.

Name: Dawit Belete Gebre

Signature: _____

Place: Addis Ababa

Date of Submission: February, 2017

This master thesis has been submitted for examination with my approval as thesis.

Advisor Name: Sewale Abate (Phd)

Signature_____ Date_____

Addis Ababa University

School of Graduate Studies

This is to certify that the thesis entitled, "Determinants of Commercial Banks profitability: An Empirical study on Private Commercial Banks in Ethiopia" was carried out by Dawit Belete Gebre under the supervision of Sewale Abate (Phd), submitted in partial fulfillment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Internal examiner: _____ Signature _____Date _____

External examiner: _____ Signature _____Date _____

Advisor: _____Signature _____Date _____

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List of Acronyms and Abbreviation

BLUE	Best Linear Unbiased Estimators
CAP	Capital Adequacy Ratio
CBE	Commercial Bank of Ethiopia
CLRM	Classical Linear Regression Model
CONC	Concentration
CPI	Consumer Price Index
ES	Efficiency Hypothesis
INDIV	Income Diversification
INF	Inflation Rate
LIQ	Liquidity
MM	Modigliani-Miller
M2/MS	Broad Money Supply
MoFEC	Ministry of Finance and Economic Cooperation
NBE	National Bank of Ethiopia
NIM	Net Interest Margin
OPE	Operational Efficiency
OLS	Ordinary Least Square
ROA	Return on Asset
ROIC	Return on Invested Capital
ROE	Return on Equity
SCP	Structure Conduct Performance
WACC	Weighted Average Cost of Capital

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Abstract

Both internal and external determinants of Bank profitability affect the profitability of Private Commercial Banks in Ethiopia. This study identifies bank specific, industry specific and macroeconomic factors that determine the profitability of Ethiopian private commercial banks. Six private commercial banks have been the subject for the study ranging from 2004/2005 to 2014/2015. The bank's Audited financial statement, National Bank of Ethiopia and Ministry of finance and Economic Cooperation has been the main source for the study and the panel analysis has been carried out to obtain the result for this empirical study. The study used ROA as a Dependent variable and capital adequacy, operational efficiency, liquidity, income diversification, concentration, GDP, inflation and money supply as independent variables. The empirical results showed that capital, operational efficiency, income diversification, concentration and money supply have significant relationship with profitability of Ethiopian private commercial banks. However the result shows insignificant relationship between profitability of Ethiopian private commercial banks with liquidity, GDP and inflation.

Keywords: Profitability, Private Commercial Banks

Chapter One

Introduction

1.1 Background of the Study Area

Financial institutions are establishments that conduct financial transactions such as investments, loans and deposits. Financial institutions channel funds and transfers risks from one economic unit to another economic unit so as to facilitate trade and resources arrangement. The performance of financial institutions can affect economic growth while at the same time institutional insolvencies can result in systemic crises which have unfavorable consequences for the economy as a whole. Bank is one example of a financial institution.

Banks get a great deal of attention in the economic literature considering that banks play a pivotal role in the economy. If the banking system in a country is effective, efficient and disciplined it brings about rapid growth in the various sectors of the economy.

Moreover, the stream of bank failures experienced in the United States of America during the great depression of the 1940's prompted considerable attention to bank performance. And the attention has grown ever since then Heffernan 2005 (as noted in Olweny & Shipo, 2011) the recent global financial crisis of 2007/2008 also demonstrated the importance of bank performance both in national and international economies and the need to keep it under surveillance at all times.

There are many aspects of the performance of banks that can be analyzed. This study focused on the determinant of profitability of private banks in Ethiopia. As noted in Flamini, McDonald & Schumacher (2009) bank profits provide an important source of equity especially if re-invested into the business. This should lead to safe banks, and as such high profits could promote financial stability. Main aim of any kind of economic activity is earning profit. A business concern is also functioning mainly for the purpose of earning profit. Profit is the measuring techniques to understand the business efficiency of the concern. However, too high profitability is not necessarily good. Garcia-Herrero,

Gavila & Santabarbara (2009) observed that too high profitability could be indicative of market power, especially by large banks. This may hamper financial intermediation because banks exercising strong market power may offer lower returns on deposit but charge high interest rates on loans. Too low profitability, in turn, might discourage private agents (depositors and shareholders) from conducting banking activities thus resulting in banks failing to attract enough capital to operate. Furthermore, this could imply that only poorly capitalized banks intermediate savings with the corresponding costs for sustainable economic growth.

According to Flamini et al, (2009), bank profitability is high in Sub-Saharan Africa compared to other regions.

The banking environment in Ethiopia has, for the past decades, undergone many regulatory and financial reforms like other African countries and the rest of developing world. These reforms have brought about many structural changes in the banking sector of the country and have also encouraged private banks to enter and expand their operations in the industry. (Lelissa, 2007).

Despite these changes, currently, the banking industry in Ethiopia is characterized by operational inefficiency, little and insufficient competition and perhaps can be distinguished by its market concentration towards the big government owned commercial bank and having undiversified ownership structure (Lelisa, 2007). The existence of less efficiency and little & insufficient competition in the country's banking industry is a clear indicator of relatively poor performance of the sector compared to the developed world financial institutions. Thus, it is important to know the determinants of banks profitability for an efficient management of banking operations aimed at ensuring growth in profits and efficiency (Abera, 2012).

In light of the above, a lot of research work has so far taken place concerning the issue of determinants of bank profitability. In the context of Ethiopia, to the knowledge of the researcher, until about 2012 there appears to be very limited work on the assessment of

determinants of profitability of banks but after 2012 it has received attention by Ethiopian researchers.

In the context of the above discussions, the purpose of this study is to assess and examine the determinants of profitability of private commercial banks in Ethiopia.

1.2Banking industry in Ethiopia

For the last decade, the Ethiopian financial institutions in general and banking industries in particular have shown an impressive progress in terms of number and service which not only creates the employment opportunities but also enhances the business activities in the Ethiopian economy.

The first bank to be established in Ethiopia was the Bank of Abyssinia in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British owned National Bank of Egypt Mr. Ma Gillivary to open a new bank in Ethiopia. The bank was managed by Egyptian National Bank and was given different rights among which is the right to issue notes and coins and the promise not to allow any bank to establish in the country in the next 50 years.

In 1931, the Bank of Abyssinia was replaced by the Bank of Ethiopia which was wholly owned by the government and members of the Ethiopian aristocracy, becoming the first 100% African-owned bank on the continent; it was also authorized to issue notes and coins and to act as the government's bank. It operated for only a few years, being closed after the Italian invasion. During the Italian occupation, several Italian banks opened branches in Ethiopia (Harvey, 1995**)**

During the five-years of Italian occupation banking activity of the country was relatively expanded. In that time, the Italian banks were particularly active. As a result, most of the banks that were in operation during this period were Italian banks. Like Banco di' Italia, Banco di Roma and Banco di Napoli. After independence from Italy's brief occupation, in 1941 another foreign bank, Barclays Bank came to the country where the role of

Britain was paramount owing to its strategic planning during the Second World War, and in remained operational until its withdrawal in 1943 . Then on April 15, 1943 the Ethiopian government established the State Bank of Ethiopia. This Bank was operating as both a commercial and a central bank until 1963 when it was remodeled into today's National Bank of Ethiopia (NBE), (the Central Bank, re-established in 1976) and the Commercial Bank of Ethiopia (CBE).

The National Bank of Ethiopia with more power and duties started its operation in January1964 and commercial bank of Ethiopia took over the commercial banking activities of the former State Bank of Ethiopia.

The first privately owned bank, Addis Ababa Bank S.C, was established on Ethiopians initiative and started operation in 1964 with capital of 2 million in association with National and Grindlay Bank, London which had 40 percent of the total share.

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 (the Commercial Bank of Ethiopia), a National Bank (recreated in 1976), two specialized banks (the Agricultural and Industrial Bank – renamed later as the Development Bank of Ethiopia; and a Housing and Saving Bank – renamed later as the Construction and Business Bank and recently absorbed by the Commercial Bank of Ethiopia) as well as one insurance company – Ethiopian Insurance Company were formed. Following the regime change in 1991 and the liberalization policy in 1992, these financial institutions were reorganized to work on market-oriented policy framework. Besides, new privately owned financial institutions were also allowed to work along the publicly owned ones (Geda, 2006). As a result, the number of banks operating in the country reached 18 of which 16 are private, and the remaining 2 are state owned. Both public owned and private banks which are operating currently in the country are listed in the following table 1.

Table 1: List of commercial banks operating in Ethiopia

S/N	Name	Year of Establishment
1	Abay Bank	2010
2	Addis International Bank	2011
3	Awash International Bank	1994
4	Bank of Abyssinia	1996
5	Berhan International Bank	2010
6	Bunna International Bank	2009
7	Commercial Bank of Ethiopia	1963
8	Cooperative Bank of Oromia	2005
9	Dashen Bank	1995
10	Debub Global Bank	2012
11	Development Bank of Ethiopia	1909
12	Enat Bank	2013
13	Lion International Bank	2006
14	Nib International Bank	1999
15	Oromia International Bank	2008
16	United Bank	1998
17	Wegagen Bank	1997
18	Zemen Bank	2009
	Total	

Source: National Bank of Ethiopia

The two governments owned banks are Development Bank of Ethiopia and Commercial Bank of Ethiopia while the sixteen privately owned banks are Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank, Nib International Bank, Cooperative Bank of Oromia, Lion International Bank, Oromia International Bank, Zemen Bank, Bunna Bank, Berhan International Bank,Enat Bank, Abay Bank, Debub Global Bank& Addis International Bank.

1.3 Statement of the problem

The best performance of any industry in general and any firm in particular plays the role of increasing the market value of that specific firm coupled with the role of leading towards the growth of the whole industry which ultimately leads to the overall success of the economy. Measuring the performance of financial institutions has gained the relevance in the corporate finance literature because as intermediaries, these companies in the sector are not only providing the mechanism of saving money and transferring risk but also helps to channel funds in an appropriate way from surplus economic units to deficit economic units so as to support the investment activities in the economy.

The recent economic crisis has highlighted that a well-functioning financial system is significantly important for economic growth. The financial system enables an economy to be more productive as it allows investors with few resources to use savings from those with few prospects of investing. In this context, it is crucial to know what drives bank profitability. Higher profitability not only allows banks to generate funds to grant more credit to the economy, but is also important for regulators as it guarantees more flexible capital ratios, even in a riskier business environment. In addition, bank profitability must also lead to fair returns for its shareholders (Abera, 2012).

Despite all the above facts and the financial sector reforms in Africa since the 1990s with an aim of improving profitability, efficiency and productivity, banks performance has remained poor with substantial gaps in service delivery to private agents (Francis, 2010).

As noted by Damena (2011) different literatures on the banking sector have pointed out that a great deal of economic activity would be seriously hindered if the most prominent agents in the credit markets, the commercial banks, did not execute their function properly. A sound and profitable banking sector is able to resist negative shocks and contributes to the stability of the financial system and sustainability of overall economic development. Thus, identifying the key success factors of commercial banks could allow the bank management and directors to formulate policies for improving the profitability of the banking industry. According to different banking area researchers, the banking sector profitability determinants are divided into two main categories, namely the internal

determinants and the external determinants. The internal determinants include management controllable factors such as the level of deposit, the level of loans and advances, investment in securities, non-performing loans, non interest incomes, and overhead expenditure. Other determinants such as total capital and capital reserves also play a major role in influencing the profitability. Similarly, external determinants include those factors which are beyond the control of management of the bank such as market share, market growth, market concentration, interest rates, inflation rates, and GDP growth.

Commercial banks in Ethiopia have over the years depended very much on increasing lending rates in order to maximize profits, without much regard to the efficient use of resources that could result in cost minimization. Thus the performance of commercial banks should be measured in respect of total assets, loans, non-interest income, total overhead expenses, and book value of stockholders' equity.

The Ethiopian banking sector, regardless of the series of changes and liberalization measures undertaken which is expected to change the ownership structure, the concentration, and profitability performance of the sector as compared to the situations prevalent before the reform period, currently the country’s banking sector is characterized by the existence of high concentration (low competition) and operational inefficiencies; which is a clear sign of unimpressive performance of the sector (Lelisa, 2007).

Ethiopian banking industry is characterized by fear, i.e. banks tend to avoid risky investments which may result in greater amount of profit for them and lack of active secondary stock market in the country which may have reduced their investment options and their profitability as well are also clear indicators as Ethiopian banks are still not operating at their full capacity. In general, even if Ethiopian banks looks like profitable, lack of competition, limited number of branches, poor asset quality, low efficiency, higher levels of liquidity and others clearly indicate as they are still not performing well and attaining the maximum profit that they can achieve.

All the above discussed problems in the banking industry of Ethiopia in relation to profitability along with the gap (to be established in the next chapter) with respect to profitability and the link between profitability and internal and external determinant factors call for detailed investigation.

Furthermore, in order to minimize the above stated problems like the existence of high concentration (low competition), low efficiency, investing on low rate bond, poor asset quality and others related to profitability, identifying the factors that affect bank profitability is vital. Therefore, this study will seek to fill the gap by providing full information about the internal and external factors that affects profitability by examining the untouched one, and replicating the existing in the Ethiopian context by using six private commercial banks that have operated in the country and have 11 years of data.

1.4 Objective of the Study

1.4.1 General objective

The main objective of this study is to determine the internal and external factors that influence the profitability of private commercial Banks in Ethiopia.

1.4.2 Specific Objective

The specific objectives of the study are;

1. To examine the impact of bank specific factors like capital adequacy, operational efficiency, liquidity and income diversification on private commercial banks profitability.
2. To identify the impact of industry specific factor i.e. concentration on private commercial banks profitability.
3. To assess the impact of macroeconomic factors like gross domestic product, inflation and money supply on private commercial banks profitability.

1.4.3 Research Questions

To provide answers to the broad research objective that is described above the following research questions are framed:

- *What are the bank specific determinants of private commercial banks profitability in Ethiopia?*
- *What are the industry specific determinants of private commercial banks profitability in Ethiopia?*
- *What are the macroeconomic determinants of private commercial banks profitability in Ethiopia?*

1.5 Hypotheses of the Study

In line with the broad purpose statement the following hypotheses were also formulated for investigation. Based on the objective, the present study seeks to test the following hypotheses:

HP_1: There is positive relationship between capital adequacy and bank's profitability.

HP_2: There is negative relationship between operating efficiency and bank's profitability

HP_3: There is a Positive/Negative relationship between the liquidity risk of a bank and the bank's profitability

HP_4: There is positive relationship between non-interest income and bank's profitability.

HP_5: There is positive/Negative relationship between concentration and bank's profitability

HP_6: There is positive relationship between real gross domestic product and bank's profitability

HP_7: There is a positive/negative relationship between inflation and bank profitability

HP_8: There is positive relationship between broad money supply and the bank's Profitability

1.6 Limitation and scope

Even though there are other formal, semiformal and informal financial institutions, the study focused only on the profitability determinant of private commercial banks in Ethiopia. The determinants of commercial banks profitability that are used in this study are those frequently described in conventional banking studies and literatures. It is acknowledged that there are other factors that may impact on profitability of banks but not included in this study. The scope of the study is limited to six private commercial banks in Ethiopia. The data required for defining internal & external factors were limited to 11 years (2005-2015).The balance sheet and income and loss statements of six Ethiopian private commercial banks were collected from the banks. In addition, the study used bank sector data and countrywide macroeconomic data that were driven from National Bank of Ethiopia and MoFEC.

Limitation of the Study

The study used more of financial related variables than that of non-financial measure variables which may have influence and might need a further investigation. Financial reports within eleven years may be affected by different non modeled variables in the state of the economy. This might fail to measure the actual effects of the internal and external determinants of profitability of private banks.

1.7 Significance of the study

The main reason for this study is to show the bank specific, industry specific and macroeconomic determinants of profitability of private commercial banks in Ethiopia. To this end, particularly this study has importance for the following bodies:

- ✓ **Management:** Administration interested in identifying indicators of success and failure to take the necessary actions to improve the performance of the company and choose the right decisions.
- ✓ **Government**: Government interested in knowing which companies operate successfully or failed to take the necessary measures to avoid crises of the bankruptcy in these companies.

- ✓ **Investors**: Investors interested in such studies in order to protect their investment, and directing it to the best investment.
- ✓ **Customers**: Customers are interested in knowing the ability of banks to pay their obligations based on the indicators of success of the companies.

1.8. Structure of the study

This study will mainly focus on the identification of both the internal (bank-specific factors) and the external factors which includes the industry-specific factors as well as the broader macro-economic factors that can affect the profitability of privately owned commercial banks in Ethiopia. The study will be organized into five chapters. Chapter one presents introductions of the study. The literature review part of the study is presented in Chapter two. Chapter three presents the research design and methodology. The results of the different methods used and analysis of the results are presented in chapter four and finally, chapter five presents the conclusions and recommendations.

Chapter Two

Literature Review

Several factors influence banks operations and banks profitability. The purpose of this chapter is to review the literatures related to bank profitability and its determinants. First, this chapter discusses the function of banks, followed by theories about profitability then review related to bank profitability and its determinants and finally, reviews of the previous studies conducted in relation to bank profitability and its determinants in other countries and Ethiopia.

2.1 Function of Banks

This paragraph discusses the function of banks in the economy and examines the question why banks exist. At first sight, the answer to this question is very intuitive and simple; banks act as an intermediary between those who are in need for money and those who have excess of money. Looking more closely to this question there could be a more detailed explanation. In a perfect capital market of Modigliani-Miller (MM), financial institutions are superfluous; namely, entities can borrow and save directly through the capital market. In reality, such perfect market does not exist; transaction costs and monitoring costs distort capital markets. Furthermore, capital markets suffer from the information asymmetry and the agency problem. The agency problem refers to the dissimilar incentives of borrowers and savers, in a broader context it refers to the dissimilar incentives of principles and agents (Jensen & Meckling, 1976). In a case of financial distress, borrowers are limited liable; implying that they have incentives to alter their behavior by taking on more risk than savers are willing to accept. Monitoring the borrowers' behavior is time consuming, complex and expensive for individuals. In inefficient markets, financial intermediation is beneficial since banks have lower monitoring and transaction costs than individuals, due to economies of scale and scope.

Another important aspect of banking is the function of maturity transformation. Banks receive short-term savings from depositors and transform those savings into long-term loans to borrowers. By holding a part of the short-term savings in liquid assets and cash,

banks could withstand daily withdrawals from depositors. Banks offer a unique service; lending long term while guaranteeing the liquidity of their liabilities to depositors, which can withdraw their money at any time without a decline in nominal value (Schooner & Talyor, 2010). Capital markets cannot achieve maturity transformation with the same benefits as banks can. Individual investors face liquidity, price and credit risk, which they cannot diversify to the extent banks can. As savers do not withdraw their deposits at the same time, banks hold only a minor part of the savings in liquid cash. Thus, banks diversify liquidity risks over a large pool of savers. Individual savers can also diversify their investments in terms of credit and price risks but it remains unlikely that they could withdraw the investments at any time without facing liquidity issues.

Nowadays, bank activities are more diverse than ever. In the past decades, competition has increased and new activities have emerged. The traditional form of banking, receiving deposits and extending credits, has become less important. Ever since the complexity of balance sheet has increased, as did balance sheet and risk management (van & Bratanovic, 2009).Besides the incorporations of liquidity, price and credit risks in banking activities, banks increasingly faces market risks (e.g. interest rate risk and currency risk). One may assume that banks' risk managers properly diversify these risks and closely monitor borrowers' behavior to avoid bank failure or financial distress. Nevertheless, monitoring bank behavior is required to safeguard the continuity and stability of the banking sector due to moral hazard issues.

2.2. Theories on Profitability

2.2.1 Regulation

The main objective of regulation and supervision in the banking is to deter excessive risk taking in the banking sector. Without any regulation, politicians assume that banks will take on more risks than necessary and acceptable for depositors. At the same time risk taking is beneficial for average individual banks, one bank failure is highly undesirable for depositors and may spill over to the entire banking sector.

Regulators and supervisory entities that set minimums for equity capital, and establish other types of regulations can affect the bank's capital structure decisions, and hence its earnings. The regulators establish the conditions of entry to the banking industry, the compliance with the capital ratios and liquidity rules, the enforcement of the larger exposure rules in the foreign exchange market, the right of inspection and in our countries case require banks to buy NBE bills etc. Furthermore, (as noted by Alemu, 2015) citing Saunders and Cornett (2008) the net regulatory burden could also negatively influence bank performance. The net regulatory burden equals the cost minus the benefits of regulation. Costs of regulation are e.g. compliance costs, referring to the costs of preparing reports and statements to regulators, or costs of being restricted from an optimal portfolio or capital structure.

2.2.2 The Structure Conduct Performance (SCP) Model

The relationship between performance and market structure on the banking industry is based on the development of the theory in the industry organization. The Structure Conduct Performance (SCP) model is one of the earliest frameworks used to examine the factors that determine the profitability of Banks (Grygorenko, 2009). Baye (2010), (as quoted by Damena, 2011) the structure of an industry refers to the factors such as technology, concentration, and market conditions. Conduct refers to how individual firms behave in the market; it involves pricing decisions (such as interest rate, commission and fees), advertising decisions, and decisions to invest in research and development, among other factors. Performance refers to the resulting profits and social welfare that arise in the market. The Structure Conduct Performance (SCP) paradigm views these three aspects of the industry as being integrally related and asserts that the market structure causes firms to behave in a certain way. In turn, this behavior causes resources to be allocated in certain ways leading to either an efficient or inefficient market.

The Structure-Conduct-Performance (SCP) hypothesis, asserts that increased market power yields monopoly profits. Profits of firms that operate in highly concentrated industries tend to be higher than those that are less concentrated, as concentration permits the collusion of banks to set higher prices and consequently gain substantial profits.

2.2.3 Efficiency Hypothesis

A theoretical attempt to offer an alternative explanation on the market Structure Conduct Performance (SCP) relationship is the efficiency hypothesis which states that banks earn more profit because they are more efficient than others. In other words, profitability of bank is determined not by the market concentration but by bank efficiency (Grygorenko, 2009).

There are also two distinct approaches within the efficiency; the X-efficiency and Scale–efficiency hypothesis. According to the X-efficiency approach, more efficient firms are more profitable because of their lower costs. Such firms tend to gain larger market shares, which may manifest in higher levels on market concentration, but without any causal relationship from concentration to profitability (Athanasoglou, Delis & Staikouras, 2006). The scale approach emphasizes economies of scale rather than differences in management or production technology. Larger firms can obtain lower unit cost and higher profits through economies of scale. This enables large firms to acquire market shares, which may manifest in higher concentration and then profitability (Athanasoglou et al., 2006)

2.2.4 The Risk-Return Trade Off

The balance sheet structure could also influence banks' profitability; in this context, the equity-to-asset ratio is an important balance sheet ratio that has received much attention. For this ratio, theoretical explanations assume different signs of the relationship with profitability. According to the Modigliani-Miller theorem there exists no relationship between the capital structure (debt or equity financing) and the market value of a bank (Modigliani and Miller, 1958). In this context, their does not exist a relationship between the equity-to-asset ratio and funding costs or profitability. But information asymmetry and transaction costs distort MM's perfect market. Thus, when the perfect market does not hold there could be a possible explanations for a negative relationship. Financing theory suggest that increasing risks, by increasing leverage and thus lowering the equity-to-asset ratio (increasing leverage), leads to a higher expected return as entities will only

take on more risks when expected returns will increase; otherwise, increasing risks have no benefits.

2.3. Measure of Profitability

There are different ways to measure profitability such as: return on asset (ROA), return on equity (ROE) and return on invested capital (ROIC). ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings whereas ROE measures a company's profitability which reveals how much profit a company generates with the money shareholders have invested. ROIC is a measure used to asses' company's efficiency in allocating the capital under its control in profitable investments. This measure gives a sense of how well a company is in using its money to generate returns. Comparing a company's ROIC with its weighted average cost of capital (WACC) reveals whether invested capital is used efficiently or not.

2.4. Determinants of bank profitability

The review of empirical literatures on bank profitability show that determinants are organized in two parts namely internal and external determinants. The internal determinants include variables driven from financial statement and variables internal by their very nature. External determinants comprise review of industry-specific determinants which has impact on the banking sector profitability alone and macroeconomic determinants which affect all business activities of a given country. Below we will see some of the determinants used by researchers.

2.4.1. Internal Determinants

The internal (bank-specific factors) are factors that are related to internal efficiencies and managerial decisions. Such factors include determinants such as bank capital, bank size, Liquidity, asset composition, income diversification, credit risk and operational efficiency (expenses management) etc.

Capital Adequacy: it is measured by the ratio of equity capital to total asset. Bank equity capital can be seen in two ways. Narrowly, it can be seen as the amount contributed by the owners of a bank (paid-up share capital) that gives them the right to enjoy all the future earnings or more comprehensively or it can be seen as the amount of owners' funds available to support a bank's business. It examines the relationship between profitability and bank capitalization. A strong capital structure is essential for financial institutions in developing economies, since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions. A high capital asset ratio is assumed to be indicator of low leverage and therefore lower risk.

Bank Size: In most literatures the effect of size on banks profitability are represented by total asset. Ramlall (2009) indicated that **s**ize is used to capture the fact that larger banks are better placed than smaller banks in harnessing economies of scale in transactions and enjoy a higher level of profits.

Liquidity: Liquidity is a prime concern for banks and the shortage of liquidity can trigger bank failure. Banking regulators also view liquidity as a major concern. This is because banks without sufficient liquidity to meet demands of their depositors risk experiencing bank run. Holding assets in a highly liquid form tends to reduce income as liquid asset are associated with lower rates of return. For instance, cash which is the most liquid of all assets is a non-earning asset. It would therefore be expected that higher liquidity would negatively correlates with profitability. Liquidity risk is estimated by the ratio of liquid assets to total assets

Asset Composition: which is explained by total loans divided by total asset, provides a measure of the main income source of the bank assets transferred to debtors' (Vong & Chan, 2008).

Fee Based Service: The importance of fee-based services of banks and their product diversification is captured by the non-interest income to gross income ratio. In recent years banks have increasingly been generating income from "off-balance sheet" business and fee income general. Non-interest income consists of commission, service charges, and fees, guarantee fees, and foreign exchange profit.

Credit Risk: It is measured by the ratio of loan loss provisions over total loans and advances. The loan loss provisions are reported on a bank's profit and loss account and it is a measure of capital risk, as well as credit quality of the bank. According to Vong & Chan (2008), if banks operate in more risky environments and lack the expertise to control their lending operations, it will probably result in a higher loan-loss provision ratio.

Operating Efficiency: It is used as an indicator of management's ability to control costs and is expected to have a negative relation with profits, since improved management of these expenses will increase efficiency and therefore raise profits. The expense to income ratio is used as proxy for operating efficiency.

Employee Efficiency: The people in a bank are the most valuable resources and the major driving force for successes and failures. The quality of human resources employed by a bank greatly affects its profitability. The recruitment process and training standard of the financial institution, which reflects the quality of the people in the organization, their ability to guidance and support to operations staff, compensation package as per the industry norms and attrition rate in the financial institution, which reflect the satisfaction among the employees and staff towards their work and organization. It is defined as the ratio of staff salaries to total asset.

Expenses Management: The expense management variable, which is defined as the ratio of non-interest expenses to total assets, provides information on variations in operating costs. The total cost of a bank, excluding interest expense, includes operating cost and other expenses such as depreciation and taxes. From these only operating expenses can be viewed as the outcome of the bank management decision. Therefore, expense management is captured by the ratio of these operating expenses to total assets and it is expected to be negatively related with profitability, since improved management of these expenses will increase efficiency and thereafter raise profits (Damena, 2011).

Funding cost: the interest rate paid by commercial banks for the funds that they deploy in their business, the cost of funds is one of the most important input costs for a financial institution, since a lower cost will generate better returns when the funds are deployed in the form of short term and long-term loans to borrowers. The spread between the cost of funds and the interest rate charged to borrowers represents one of the main sources of

profit for most financial institutions. The most common ratio used to examine funding costs is the ratio of interest expenses on deposits to total deposits.

2.4.2 External Determinants

The External determinants of commercial bank profitability are those factors which are external to the commercial banks and hence outside the control of management. As defined by Athanasoglou, Brissimis & Delis (2005) the external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions. Although the commercial banks cannot control these indirect factors but can build flexibility into their operating plans to react to changes in these factors (Rasiah, 2010). The following sections discussed about external determinants of commercial bank profitability such as industry-specific determinants and macroeconomic variables.

Industry Specific Determinants

Ownership, regulation and market concentration are principal bank profitability determinants that has been used by varies banking area empirical studies.

Ownership: Privately owned banks have been assessed to be more profitable than state owned (public) counterparts conceived that public banks' low profitability is due to the fact that, rather than maximizing profits, they respond to a social mandate.

Regulation: Commercial banks are stringently regulated by the central bank to prevent failures because of fraud, mismanagement, excessive risk taking etc. Commercial banks must comply with all applicable laws, such as statutory reserve requirements, liquidity requirements, laws relating to taxation, tenure and opening of new branches, mergers, etc

Concentration: as noted by Damena (2011) in the normal circumstances, a higher bank concentration might be the result of a tougher competition in the banking industry, which leads to negative relationship between performance and market concentration. However, if collusion occurs among firms, it may result that higher rates may be charged on loans and lower interest rates may be paid on deposits, then it may have a positive impact on profitability.

Banking sector development: a total asset of the industry to GDP ratio indicates that financial development plays an important role in the economy. When the market becomes more competitive, banks need to adapt different strategies in order to retain profitability.

Macroeconomic Determinants

Banks has a major role in economic activity of every country through provision of financial services. In addition to banks influence on economic activities, macroeconomic factors also affect the performance of commercial banks in a given country.

Economic Growth: Economic growth is measured by the real GDP growth. According to previous literatures GDP growth is expected to have a positive impact on bank profitability.

Interest Rate: Interest expenses and interest income, affect net interest income and hence bank profitability. In view of this, interest rates have been considered as determinants of bank profitability in most banking area researches.

Inflation: Empirical studies on the relationship between inflation and bank profitability suggest that if a bank's income rises more rapidly than its costs, inflation is expected to exert a positive effect on profitability. On the other hand, a negative coefficient is expected when its costs increase faster than its income.

Money Supply Growth: bank's profitability is sensitive to macroeconomic conditions. It is the growth of money supply as measured by currency in circulation. Empirical studies on the relationship between money supply growth and profitability suggest that it has a positive effect on profitability.

Foreign exchange Rate: Foreign Exchange risk arises when a bank holds assets or liabilities in foreign currencies and impacts the earnings and capital of bank due to the fluctuations in the exchange rates. No one can predict what the exchange rate will be in the next period, it can move in either upward or downward direction regardless of what the estimates and predictions were. This uncertain movement poses a threat to the earnings and capital of bank, if such a movement is in undesired and unanticipated direction.

2.5. Review of previous studies

2.5.1 Review of previous studies in other countries

This sub section presents some of the previous studies in other countries reviewed by the researcher chronologically.

Athanasoglou et.al (2005) in their paper, specified an empirical framework to investigate the effect of Bank-specific, industry-specific and macroeconomic determinants on the profitability of Greek banks. They used capital, credit risk, productivity (Employee efficiency), expense management, size, ownership structure, concentration, inflation and cyclical output.

They found that capital is important in explaining bank profitability and that increased exposure to credit risk lowers profits. Additionally, labor productivity growth has a positive and significant impact on profitability, while operating expenses are negatively and strongly linked to it, showing that cost decisions of bank management are instrumental in influencing bank performance. The estimated effect of size does not provide evidence of economies of scale in banking. Likewise, the ownership status of the banks is insignificant in explaining profitability, denoting that private banks do not in general make relatively higher profits, at least during the period under their consideration. Also, the SCP hypothesis is not verified, as the effect of industry concentration on bank profitability was found insignificant. Therefore, this result is in line with theoretical considerations according to which concentration is not related to profitability, once the other effects are controlled for in the model.

Finally, macroeconomic control variables, such as inflation and cyclical output, clearly affect the performance of the banking sector. The effect of the business cycle is asymmetric since it is positively correlated to profitability only when put out is above its trend.

Athanasoglou, et.al (2006) aim of their study was to examine the profitability behavior of bank-specific, industry related and macroeconomic determinants, using an unbalanced

panel dataset of South Eastern European (SEE) credit institutions over the period 1998-2002. This paper used annual bank level and macroeconomic data from seven SEE countries. The bank variables are obtained from the Bank Scope database, the macroeconomic variables from the IMF's International Financial Statistics (IFS) and the banking reform index from the European Bank for Reconstruction and Development (EBRD). Return on assets and return on equity are chosen as proxies for bank profitability. Among the independent variables analyzed were liquidity, credit risk, and capital adequacy, operating expense, management quality, size, concentration, inflation and economic activity. The least squares methods of fixed effects and random effects models were applied in the analysis. The estimation results indicate that, with the exception of liquidity, all bank-specific determinants significantly affect bank profitability. A key result is that the effect of concentration is positive, which provides evidence in support of the structure-conduct performance hypothesis. In contrast, a positive relationship between banking reform and profitability was not identified, whilst the picture regarding the macroeconomic determinants is mixed.

Pasiouras & Kosmidou (2007) examine how bank's specific characteristics and the overall banking environment affect the profitability of commercial domestic and foreign banks operating in the 15 European Union countries over the period 1995-2001. They find that all explanatory variables employed significantly affect the bank profitability although their impacts are not always uniform for domestic and foreign banks. The utilized internal determinants are equity to total assets, cost to income ratio, loans to customers and short term funding, and total assets. While the used external determinants are inflation rate, GDP growth, concentration level (bank total assets to GDP ratio, the ratio of stock market capitalization to bank total assets, and the ratio of stock market capitalization to GDP.

Sufian & Chong (2008) paper seeks to examine the determinants of Philippines banks profitability during the period 1990–2005. The study utilized size, credit risk, income diversification, operational efficiency, capital adequacy, GDP, inflation, money supply growth and market capitalization as determinants of profitability. The empirical findings

suggest that all the bank-specific determinant variables have a statistically significantly impact on bank profitability. The empirical findings suggest that size, credit risk, and expense preference behavior are negatively related to banks' profitability, while non-interest income and capitalization have a positive impact. During the period under their study, the results suggest that inflation has a negative impact on bank profitability, while the impact of economic growth, money supply, and stock market capitalization have not significantly explained the variations in the profitability of the Philippines banks.

Sufian & Shah (2009) paper seeks to examine the determinants of the profitability of the Chinese banking sector during the post-reform period of 2000–2005. The empirical findings from this study suggest that all the determinants variables have statistically significant impact on China banks profitability. However, the impacts are not uniform across bank types. They found that liquidity, credit risk, and capitalization have positive impacts on the state owned commercial banks (SOCBs) profitability, while the impact of cost is negative. Similar to their SOCB counterparts, they found that joint stock commercial banks (JSCB) with higher credit risk tend to be more profitable, while higher cost results in a lower JSCB profitability levels. During the period under study, the empirical findings suggest that size and cost results in lower city commercial banks (CITY)profitability, while the more diversified and relatively better capitalized CITY tend to exhibit higher profitability levels. The impact of economic growth is positive, while growth in money supply is negatively related to the SOCB and CITY profitability levels.

Flamini et.al (2009) paper seeks to understand the determinants of high bank profits in SSA and explores the relationship between profits and equity in the region’s commercial banking sector. The analysis was based on a sample of 389 banks, operating in 41 countries from 1998 through 2006. They used credit risk, activity mix, capital, size, ownership status, market power, operating efficiency, market structure, GDP growth and inflation as the main determining variables. They found that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Bank returns are affected by macroeconomic variables, suggesting that

macroeconomic policies that promote low inflation and stable output growth do boost credit expansion. The results also indicate moderate persistence in profitability. Causation in the Granger sense from returns on assets to capital occurs with a considerable lag, implying that high returns are not immediately retained in the form of equity increases.

Krakah & Ameyaw (2010) employed regression analysis to estimate and examine the determinants of the profitability of commercial banks, by examining the drivers of the bank‘s profitability using the Ghana Commercial Bank Ltd and Merchant Bank Ltd as case studies, following an examination of the performance of the two Banks in two decades. Results from the study reveal that the performance of the Banks has been highly volatile with the banks recording negative profits during some periods within the two decade under their study i.e. from 1990 to 2009. The independent variables they used in their study are size, credit risk, non-interest income, non-interest expense, capital adequacy, and size of the Ghanaian economy, growth of money supply and annual rate of inflation. The study revealed that non-interest income, non-interest expense, bank's capital strength, natural log of total assets, growth of money supply, and annual rate of inflation are significant key drivers of banks’ profitability in Ghana. However, the size of the Ghanaian economy and loan loss provision or provisions for bad debt did not have any significant impact on the banks profitability.

Trujillo-Ponce (2011) analyses the factors that determine the profitability of Spanish banks for the period of 1999–2009. The paper use ROA and ROE as dependent variable and Asset structure, Asset quality, Capitalization, Financial structure, Efficiency, Size, Revenue diversification, Industry concentration, Economic growth, Inflation and Interest Rates as independent variables. The paper found that except for financial structure, size and Revenue diversification the variables were significant at 1%, 5%, and 10% significance. So he concluded that the high bank profitability during these years is associated with a large percentage of loans in total assets, a high proportion of customer deposits, good efficiency and a low doubtful assets ratio. In addition, higher capital ratios also increase the bank’s return, but only when return on assets (ROA) is used as the

profitability measure. He found no evidence of either economies or diseconomies of scale or scope in the Spanish banking sector.

Suzuki & Sastrosuwito (2011) paper aims to analyze the determinants of post crisis Indonesian banking system profitability, covering the period 2001-2008. They employed Panel data in the empirical estimation, and a fixed cross-sectional effect capture unobserved idiosyncratic effects of different banks. The effect of bank-specific (expenses management, capital adequacy, loan intensity (credits/total assets), size), industry-specific (concentration) and macroeconomic determinants (inflation) were examined. The estimation results show that expenses management, capitalization, and loan intensity significantly affect bank performance. They also found evidence of the structure-conduct-performance (SCP) hypothesis, indicated by a positive and significant effect of industrial concentration on profitability. Furthermore, the evidence of the impact of macroeconomic environment cannot be confirmed due to insignificant result.

Obamuyi (2013) study investigates the effects of bank capital, bank size, expense management, interest income and the economic condition on banks' profitability in Nigeria. The researcher employed fixed effects regression model on a panel data obtained from the financial statements of 20 banks from 2006 to 2012. The results indicate that improved bank capital and interest income, as well as efficient expenses management and favorable economic condition, contribute to higher banks' performance and growth in Nigeria. Thus he recommended that, government policies in the banking system should encourage banks to regularly raise their capital and provide the enabling environment that will accelerate economic growth in the country.

Al-Qudah & Jaradat (2013) used panel data analysis fixed effects model and the generalized least square method to determine the effect of macroeconomic variables and bank characteristic on the profitability of Jordanian Islamic banks for the period (2000–2011). Their study used Capital adequacy, Liquidity, Leverage, size, Logarithmic of Amman stock Exchange index, Logarithmic of construction licensed square meters and broader money supply growth as determinants of Jordanian Islamic banks profitability.

The empirical analysis shows that capital adequacy and bank size have a positive and significant impact on return on assets (ROA) and return on equity (ROE). While leverage measured by total deposit to total assets has a negative and significant impact on (ROA) and (ROE) while liquidity has an insignificant effect on (ROA) and negative significant impact on (ROE). The study found that macroeconomic factors represented by Amman stock exchange index, construction licensed square meters and money supply growth are good determinants for Islamic banks profitability.

Ongore & Kusa (2013) in their study to determine the Determinants of Financial Performance of Commercial Banks in Kenya used linear multiple regression model and Generalized Least Square on panel data to estimate the parameter, the result showed that capital adequacy, asset quality and management efficiency significantly affect the performance of commercial banks in Kenya. However, the effect of liquidity on the performance of commercial banks is not strong. The relationship between bank performance and capital adequacy and management efficiency was found to be positive and for asset quality the relationship was negative. This indicates that poor asset quality or high non-performing loans to total asset related to poor bank performance. Thus, they concluded that banks with high asset quality and low non-performing loan are more profitable than the others. The other bank specific factor liquidity management represented by liquidity ratio was found to have no significant effect on the performance of commercial banks in Kenya. The direction and effect of macroeconomic variables on the performance of commercial banks in Kenya was inconclusive. It was found that GDP had a negative correlation with ROA and NIM and positive with ROE. Moreover, the relationship was not significant. However, the other macroeconomic variable, inflation, had relatively strong negative correlation with financial performance of commercial banks in Kenya compared to GDP. Inflation affects negatively the profitability of commercial banks in Kenya for the period under their study. The moderating role of ownership identity on the overall performance of commercial banks in Kenya was not significant. Thus, they conclude that the interaction effect of ownership identity on the financial performance of commercial banks in Kenya was not significant. In general, they concluded from this empirical study that bank specific factors (factors under the control

of managers) are the most significant determinants of the financial performance of commercial banks in Kenya.

Jabar & Al-khawaldeh (2014) investigated the determinants of profitability of Jordanian banks under two headings: first, bank characteristics (internal factors) namely, capital adequacy, the cost to income ratio, liquidity calculated as loans to customers and the accounting value of the bank's total assets; second, macroeconomic and financial structures (external factors) namely, the annual inflation rate, the real gross domestic product growth, the ratio total assets of the deposit money in banks divided by the GDP (ASSGDP), the ratio stock market capitalization to total assets of the deposit money in banks and the ratio stock market capitalization to GDP. To achieve this, they used an array of modeling techniques to provide a more comprehensive picture. That includes multivariate analysis. They divided this analysis for three models: The first model was the ROAA with the internal factors. The second model was the ROAA with the external factors. The third model was the ROAA with aggregate internal and aggregate external factors. These models ware run with un-transformed data.

The results demonstrate that internal factors have a significant impact but not capital adequacy and liquidity ratio for the transformed model, while size is insignificant for the transformed and untransformed models. With respect to external factors, inflation, total assets of the deposit money banks divided by the GDP, and stock market capitalization to total assets are significant associated with transformed and untransformed models. Nevertheless, the study finds a significant impact between internal and external factors in the third model.

Frederick (2014) study seeks to establish the underlying factors responsible for performance of domestic commercial banks in Uganda. The factors are analyzed in the light of structure conduct performance (SCP) and Efficiency hypothesizes (ES). This is supplemented by Global advantage theory together with Home field theory. The study used Bank liquidity, Capital adequacy, Credit Risk, Bank size, Market profit opportunity, Cost efficiency, Non-interest income, Interest income, Cost inefficiency, Bank

Diversification, Financial leverage, Management inefficiency, Reputation, Economic growth, Annual Inflation rate and Bank interest rate.

The study concludes that Management efficiency measured by Operating expenses to total income; Asset quality measured by Loan loss provisions to total Loans; Capital adequacy measured by equity to total assets; Interest income measured by net interest income to total assets and Inflation measured by consumer price index (CPI), are significant factors affecting performance of domestic commercial banks in Uganda over the period 2000-2011.

Duraj & Moci (2015) analyzed bank-specific, industry related and macroeconomic determinants of banks profitability in Albania. They performed multi linear regression analysis with secondary data using a sample of data from 16 banks in the period from 1999 to 2014 by taking ROE as dependent variable and credit risk, liquidity risk, total loans, GDP and inflation as independent variables. The result indicates that except for credit risk all the factors i.e. liquidity risk, total loans, GDP and inflation were significant factors that influence banks profitability in Albania in the period under their study.

Samad (2015) examined the impact of bank specific characteristics and macroeconomic variables in determining the banks' profitability of Bangladesh banking industry with a panel data. He analyzed a total of 42 Bangladesh commercial banks' financial reports from 2009-2011; by taking bank specific characteristics such as bank financial risk, bank operational efficiency, and bank sizes as well as macroeconomic variables such as economic growth to estimate their impact of bank profits. The results indicate that bank specific factors such as loan-deposit ratio, loan-loss provision to total assets, equity capital to total assets, and operating expenses to total assets are significant factors. Bank sizes and macroeconomic variable show no impact on profits.

2.5.2 Review of previous studies in Ethiopia

This particular section provides related studies conducted in the context of Ethiopia. To the knowledge of the researcher, there appears to be very limited work on the assessment of determinants of profitability of banks until about 2012. These studies include the studies of Semu (2010), Damena (2011) and Abera (2012) but after 2012 there have been more researchers done like the studies of Kebede (2014), Turi (2015) and Alemu (2015). This particular section provides a detailed review of the above mentioned papers chronologically.

A study made by Semu (2010) assessed the impact of reducing or restricting loan disbursement on the performance of banks in Ethiopia. It also attempted to examine the possible factors that compel the banks to reduce or restrict lending, covering the period from 2005-2009. Quantitative method particularly survey design approach was adopted for the study. The findings of the study showed that net deposit and paid up capital have statistically significant relationship with banks performance measured in terms of return on equity. New loan disbursement and liquidity had relationship with banks performance measured in terms of both return on asset and Return on Equity (ROE). However, the relationship was found to be statistically insignificant. Net deposit and paid up capital had no statistically significant relationship with banks performance in terms of Return on Asset (ROA).

On the other hand, Damena (2011) applied the balanced panel data of seven Ethiopian commercial banks that covers the period from 2001 to 2010. The paper used Ordinary Least Square (OLS) technique to investigate the impact of capital, size, loan, deposits, non-interest income, non-interest expense, credit risk, market concentration, economic growth, inflation and saving Interest rates on major profitability indicator i.e., return on asset (ROA). The estimation results show that all bank-specific determinants, with the exception of saving deposit, significantly affect commercial banks profitability in Ethiopia. Market concentration is also a significant determining factor of profitability. Finally, with regard to macroeconomic variables, only economic growth exhibits a significant relationship with banks' profitability.

While the study made by Abera (2012) found that that capital strength, income diversification, bank size and gross domestic product have statistically significant and positive relationship with banks' profitability. On the other hand, variables like operational efficiency and asset quality have a negative and statistically significant relationship with banks' profitability. However, the relationship for liquidity risk, concentration and inflation is found to be statistically insignificant.

The study suggests that focusing and reengineering the banks alongside the key internal drivers could enhance the profitability as well as the performance of the commercial banks in Ethiopia. Moreover, banks in Ethiopia should not only be concerned about internal structures and policies, but they must consider both the internal environment and the macroeconomic environment together in fashioning out strategies to improve their performance of profit.

The paper by Kebede (2014) main objective was to assess the Impact of National Banks Regulation on private Banks Performance in Ethiopia. She chooses three regulatory factors affecting banks performance in terms of return on asset and net interest margin. The three regulatory factors are NBE bill purchase, Credit cap and reserve requirement. She used balanced fixed effect panel regression for the data of six private commercial banks in the sample covered the period from 2004 to 2013. The results of panel data regression analysis showed that NBE bill purchase and Credit cap had negative and statistically significant impact on banks profitability but reserve requirement had negative and insignificant impact on profitability. While measuring banks cost of intermediation through Net Interest Margin three of the regulatory variables (i.e. NBE bills, Reserve requirement and credit cap) had negative and statistically significant effect on net interest margin. Among the control variables bank size had positive and statistically significant effect on both performance measures, which means ROA & NIM. Operating efficiency and GDP had positive and statistically insignificant effect on ROA but both were statistically significant on NIM. Equity had positive and significant effect on ROA but had negative and statistically insignificant on NIM. Inflation had positive and insignificant effect on ROA but had positive and significant effect on NIM.

The paper by Alemu (2015) was to investigate determinants of commercial banks profitability in Ethiopia by using panel data of eight commercial banks from year 2002 to 2013. The study used mixed research approach and secondary financial data was analyzed by using multiple linear regressions models for the bank profitability measure, Return on Asset (ROA). He used fixed effect regression model to investigate the impact of bank size, capital adequacy, liquidity risk, operating efficiency, management efficiency, employee efficiency, funding cost, banking sector development, real GDP, inflation rate and foreign exchange rate on Return on Asset (ROA). The empirical result found that that bank size, capital adequacy and gross domestic product have statistically significant and positive relationship with banks profitability. On the other hand, variables like liquidity risk, operational efficiency, funding cost and banking sector development have a negative and statistically significant relationship with banks profitability. However, the relationship for Management efficiency, employee efficiency, Inflation and foreign exchange rate is found to be statistically insignificant.

The research done by Turi (2015) main objective was to examine the effect of external determinants on Ethiopian commercial banks from the period 1985 -2013. He classified the external determinants in to two namely in to industry-specific and macroeconomic determinants. The study used OLS estimation method to measure the effects of external determinants on profitability. Profitability was measured by three indicators: Average Return on Asset, Average Return on Equity and Net Interest Margin in order to analyze the behavior of each across years. The results show that real GDP growth was found to have a positive effect on profitability of commercial banks of Ethiopia as measured by ROA and Concentration ratio was found to have a negative effect on profitability of commercial banks of Ethiopia as measured by ROA while the Inflation rate, Real interest rate and Exchange rate were not significant in determining the profitability of commercial banks of Ethiopia as per the linear regression model.

2.6. Conclusions and knowledge gap

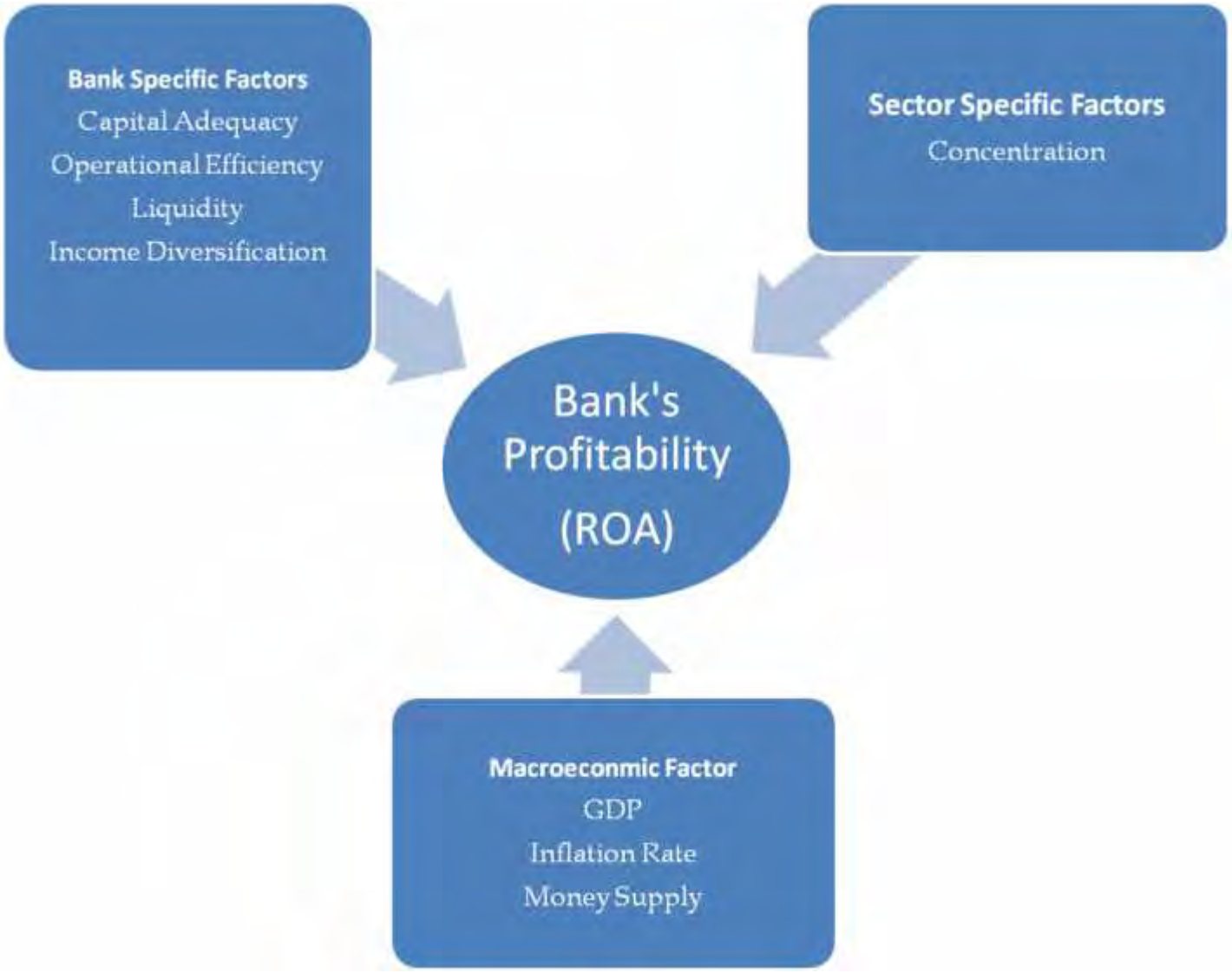
The empirical literatures that are discussed so far showed that, banks profitability is determined by both internal and external factors. However, Most of the literatures that are discussed so far appeared to have focused on studies that were conducted in the banking sector of different countries outside Ethiopia. Despite the fact that several studies were conducted by different researchers the literature review reveals the existence of controversial conclusions that results from different studies made so far.

In the context of Ethiopia, the studies conducted by Semu (2010), Demena (2011), Abera (2012), Kebede (2014), Alemu (2015) and Turi (2015) assessed the determinants of profitability in Ethiopian commercial banks by using both internal and external factors. Accordingly, as per the knowledge of the researcher, all the studies conducted in Ethiopian banking sector clearly failed to identify all the determinants of profitability and also so this research added one variable (Money Supply) to the study of determinants of profitability of banks in Ethiopia that has not been tested in the previous researches moreover, the result from different researchers as indicated in the literature review reveals the existence of controversial conclusions that results from different studies made so far Hence, the purpose of this study is to investigate the determinants of profitability in Ethiopian private commercial banking sector by utilizing an econometrics model so as to estimate both the internal and external determinants of profitability of private commercial banks in Ethiopia which is proposed to fill the existing knowledge gap.

2.7. Conceptual Framework for the Study

From the literature review, discussed above, the researcher constructed the following conceptual framework to summarize the main focus and scope of this study in terms of dependent and independent variables included.

Figure 1: Schematic Diagram of Conceptual model



Chapter Three

Research methodology

3.1. Research approach

The main objective of this study is to examine the internal and external factors that determine profitability of private commercial banks in Ethiopia for the period covering from 2005 to year 2015. This research is an explanatory research that adapts a quantitative research design by using a secondary data. The quantitative data gathering methods are useful especially when a study needs to measure the cause and effect relationships evident between pre-selected and discrete variables Addisu (2011) (as cited by Getachew, 2016).

3.2. Sampling Design and Size

The sampling technique selected for this research is purposive sampling. Particularly, the researcher used criterion sampling in which the banks service year is set as criteria and all private commercial banks that meet this criterion are selected as a sample. From all private commercial banks listed by NBE, sample of the below listed six banks that has been in business before 2005 are drawn based on the above criterion. The researcher considers that the sample size is sufficient to make sound conclusion about the population because as per NBE annual report 2014/15, out of the sixteen private commercial banks operating in Ethiopia the six selected private commercial banks constitute 55.52% in terms of branches network and 67.18% in terms of capital. Moreover, private commercial banks in Ethiopia more or less provide the same service to their customer so the sample size is sufficient.

Table 2: List of banks selected for this research (Sample Banks)

No	Name of Banks	Year of Establishment
1	Awash International Bank	1994
2	Dashen Bank	1995
3	Bank of Abyssinia	1996
4	Wegagen Bank	1997
5	United Bank	1998
6	Nib International Bank	1999

Source: Developed for the research

The researcher has taken six banks and eleven years data after balancing the number of banks and years covered. If more than eleven years data were taken the number of banks would be reduced which would negatively affect making generalized conclusion to all private commercial banks. If less than eleven years data were taken the length of the study period would be shorten which would negatively affect making sound conclusion about the population. Beside, taking smaller period data would result in the violations of assumptions of classical linear regression model.

3.3. Data source and collection

In order to analyze the effect of bank specific factors on profitability of banks audited financial statements of six privately owned commercial banks (Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank) for 11 consecutive years was collected. The secondary data collected through document reviews are mainly from the records held by NBE and the banks themselves.

The macroeconomic data were obtained from National Bank of Ethiopia (NBE), which regulates the banking sector of the country, and from The Ministry of Finance & Economic Cooperation (MoFEC) which regulates the macroeconomic issues of the country.

3.4. Definition of Variables

3.4.1 Dependent Variable

The study will examine the profitability of Ethiopian privately owned commercial banks by using return on asset (ROA) as a dependent variable. ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings. As Golin (2001) points out (cited by Ayele, 2012) the ROA has emerged as key ratio for the evaluation of bank profitability and has become the most common measure of bank profitability.

ROA= Net income/ Total asset.

ROA is probably the most important single ratio in comparing the efficiency and operating performance of banks as it indicates the returns generated from the assets that bank owns.

3.4.2 Independent Variable

This subsection describes the independent variables that are used in the econometric model to estimate the dependent variables. Following prior researches towards the determinants of banks profitability, the independent variables are classified into bank-specific, industry-specific and macroeconomic variables. Moreover, these subsection present hypotheses, by proposing the expected sign of the coefficients, based on academic literature

Bank Specific Determinants

The internal (bank-specific factors) are factors that are related to internal efficiencies and managerial decisions. From the previously discussed factors in literature review the following were selected and used in this research.

Capital Adequacy: it is measured by the ratio of equity capital to total asset. It examines the relationship between profitability and bank capitalization. A strong capital structure is essential for financial institutions in developing economies, since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions. A high capital asset ratio is assumed to be indicator of low leverage and therefore lower risk. Conversely, banks with lower capital adequacy are considered riskier relative to highly capitalized banks.

HP_1: There is positive relationship between the amount of capital of a bank and the bank's profitability?

Operating Efficiency: The expense to income ratio is used as proxy for operating efficiency. The expense to income ratio is defined as the operating costs over total generated revenues. The major elements of operating cost are staff salaries and administrative cost. It is used as an indicator of management's ability to control costs and is expected to have a negative relation with profits, since improved management of these

expenses will increase efficiency and therefore raise profits. A negative correlation is expected between the operating cost and profitability implying that higher operating cost means lower profit and vice versa.

HP_2: There is negative relationship between the operational efficiency of a bank and the bank's profitability?

Liquidity: Another important decision that the managers of commercial banks must take refers to the liquidity management and specifically the ability of an organization to meet its obligations and the solvency of organization. It indicates the percentage of bank's loans funded through deposits. The ratio of bank's advances to deposits is used as a measure of liquidity. From the literature review, Al-Qudah et.al (2013) discovered that negative correlation exists between the level of liquidity and profitability. However, samad (2015) found a significant positive relationship between liquidity and bank profitability. Thus the relationship between liquidity and profitability is indeterminate.

HP_3: There is positive/negative relationship between Liquidity of bank and the bank's profitability?

Income diversification: To recognize that financial institutions in recent years have increasingly been generating income from "off-balance sheet" business and fee income general, the ratio of non-interest income over gross income is entered in the regression analysis as a proxy for non-traditional activities. Non-interest income consists of service charges and fees, guarantee fees and foreign exchange profit. The variable is expected to exhibit positive relationship with bank profitability (Sufian et.al, 2008) and (Abera, 2012).

HP_4: There is positive relationship between Income diversification of bank and the bank's profitability?

Industry Specific Determinant

The industry specific determinants are factors that are outside the control of management which have impact on the banking sector profitability alone. From the previously discussed factors in literature review the following was selected and used in this research.

Industry Concentration Level: The concentration ratio measures the degree of bank concentration taking into account the K-banks in the banking sector. The K-bank concentration ratios used in the study is 4BCR. In the 4BCR, the largest four banks in the sector on total assets are taken into account. It is calculated as the total assets held by the four largest commercial banks divided by the total assets of all commercial banks in the banking industry. From the literature review, banks in highly concentrated markets tend to collude and therefore earn monopoly profits. However, not all studies, have found evidence to support the Structure Conduct Performance (SCP) hypothesis. The expected relationship is therefore indeterminate.

HP_5: There is positive/negative relationship between Industry concentration level and the bank's profitability?

Macroeconomic Determinants

The environments in which banks operate can influence their performance and can impact on their strategic positioning. Macroeconomic determinants are those factors which affect all business activities of a given country. From the previously discussed factors in literature review the following were selected and used in this research.

Real GDP growth: The real gross domestic product is the measure of total economic activity within the economy and it is commonly used economic indicator. The gross domestic product growth (GDP)**,** calculated as the annual change of the GDP is used as a measure of the macroeconomic conditions. A positive relation is expected between the performance of the banks and this variable based on the findings of Duraj et.al (2015) and Abera (2012).

HP_6: There is positive relationship between Real GDP growth and the bank's profitability?

Inflation: Another important macroeconomic condition which may affect both the costs and revenues of banks is the inflation rate. Staikouras et.al (2003) point out that inflation may have direct effects and indirect effects on the profitability of the banks. From the literature review, the impact of inflation on profitability depends on whether the inflation is anticipated or unanticipated. If anticipated, the interest rates are adjusted accordingly resulting in revenues, which increase faster than costs, with a positive impact on profitability. If inflation is unanticipated, the banks may be slow in adjusting their interest rates, which results in a faster increase of bank costs than bank revenues that consequently have a negative impact on bank profitability.

HP_7: There is positive/negative relationship between inflation and bank profitability?

Money supply: The variable money supply is incorporated into the regression equation to measure the stock of money supply at the end of each period. (MS) is the natural log of M2 money supply. The M2 money supply is composed of currency in circulation, private demand deposits in local currency with banks and quasi-monetary deposits. From literature review, Mamatzakis & Remoundos (2003) used the supply of money as a measure of market size and found that it significantly influences bank profitability. Therefore, relationship between money supply and bank profitability is expected to be positive.

HP_8: *There is positive relationship between money supply and bank profitability?*

Table 3: Description of the variables and their expected relationship

variables	Measure	Notation	Expected Sign
Dependent variables			
Return on Asset	Net Income/Total Asset	*ROA*	*NA*
Independent Variables			
Bank Specific Variables			
Capital adequacy	Equity/Total Asset	*CAP*	+
Operating Efficiency	Operating Expense/Total Income		-
Liquidity	Bank Advance/Deposit	*LIQ*	+/-
Income diversification	Non-interest income/Total Income	*INDIV*	+
Industry Specific Variable			
Concentration	Asset of the four largest banks/Asset of all Banks in the market	*CONC*	+/-
Macroeconomic variables			
Gross Domestic Growth	Real GDP growth (in %)	GDP	+
Inflation rate	The annual inflation rate	INF	+/-
Money Supply	The natural log of Money Supply M2	MS	+

Source: Developed for the research

3.5. Data analysis and Model Specification

The paper used panel data. This is because panel data has the advantage of giving more informative data as it consists of both the cross sectional information, which captures individual variability, and the time series information, which captures dynamic adjustment, the collected panel data were analyzed using descriptive statistics and multiple linear regression analysis. The descriptive statistics (Mean, maximum and minimum values and standard deviations) was used to analyze the general trends of the data from 2005 to 2015. A multiple line regression model and t-static was used to determine the relative importance of each independent variable in influencing profitability. For this study, the regression analysis known as OLS was used to estimate

the relationship between profitability and its determinants using E-views 8 econometric software package.

In light of the above, to investigate the relationship between capital adequacy (CAP), operational efficiency (OPE), Liquidity (LIQ), income diversification (INDIV), concentration (CONC), gross domestic product (GDP), inflation (INF) and money supply (MS) with return on asset (ROA) the following linear regression model is developed. The variables are taken from different papers discussed in the empirical literatures taking into consideration the availability of data. The regression model of this study is estimated in the following form.

$$ROA = \beta 0 + \beta 1\ CAP + \beta 2\ OPE + \beta 3\ LIQ + \beta 4\ INDIV + \beta 5\ CONC + \beta 6 GDP + \beta 7\ INF + \beta 8\ MS + \varepsilon$$

Source: Developed for the research

This study used an ordinary least squares (OLS) regression to estimate the linear equation and according to Brooks (2008), there are basic assumptions required to show that the estimation technique, OLS, had a number of desirable properties, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators (BLUE). Thus, the following section discusses about the nature and significance of the model misspecification tests.

Test for Heteroscedasticity

According to Brooks (2008), Heteroscedasticity means that error terms do not have a constant variance. If heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will underestimate the variances and standard errors. To test for the presence of heteroscedasticity, the popular white test is employed in this study. The hypothesis for the Heteroscedasticity test was formulated as follow:

H_0: There is no Heteroscedasticity problem in the model.

H_1: There is Heteroscedasticity problem in the model.

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value is less than significance level. Otherwise, do not reject H_0.

Test for Autocorrelation

According to Brooks (2008), when the error term for any observation is related to the error term of other observation, it indicates that autocorrelation problem exist in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of parameters in the model. In this study to test for the existence of autocorrelation, the popular Breusch-Godfrey Serial Correlation LM Test was employed. The hypothesis for the autocorrelation test was formulated as follow:

H_0: There is no autocorrelation problem in the model.

H_1: There is autocorrelation problem in the model.

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value less than significance level. Otherwise, do not reject H_0.

Test for normality

As noted in Brooks (2008) a normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3. One of the most commonly applied tests for normality; the Bera-Jarque formalizes these ideas by testing whether the coefficient of skewness and the coefficient of excess kurtosis are zero and three respectively. Brooks (2008) also states that, if the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant at 5% significant level. The hypothesis for the normality test was formulated as follow:

H_0: Error term is normally distributed

H_1: Error term is not normally distributed

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value of JB less than significance level. Otherwise, do not reject H_0.

Test for Multicollinearity

An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. Multicollinearity will occur when some or all of the independent variables are highly correlated with one another. If the multicollinearity occurs, the regression model is unable to tell which independent variables are influencing the dependent variable if there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. Usually, as noted by Hair et al. (2006) correlation coefficient below 0.9 may not cause serious multicollinearity problem.

Model Specification

According to Brooks (2008), Specification error occurs when omitting a relevant independent variable, including unnecessary variable or choosing the wrong functional form, so that regression model will be wrongly predicted. If the omitted variable is correlated with the included variable, the estimators are biased and inconsistent. If the omitted variable is not correlated with the included variable, the estimators are unbiased and consistent. Ramsey RESET test was used to see whether the developed model is correctly regressing.

H_0: the model is correctly specified

H_1: the model is not correctly specified

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value is greater than significance level. Otherwise, do not reject H_0.

3.6. Conclusion

This chapter deals with the approach adopted for the study to examine the effect of main determinants of profitability, the type of data used and the techniques employed to collect the data, the sampling mechanism including sample size, the methods utilized to manage and analyze the data, and the constructing of empirical model with identification and measurement of its components, measurement and selection of variables, expected relations between the dependent and independent variables

Chapter Four

Result and Discussion

In the preceding chapter the research design employed in this study is presented and discussed in detail. The purpose of this chapter is to present results and analysis of data involved in the study. Accordingly, the descriptive statistics of all the variables used in this study and the results of hypothesis testing i.e. the estimated parameters of the regression equation, their significance, the connection between the independent variables and dependent variable according to the sign and the value of the parameters for the regression model are presented and discussed in detail.

The current chapter has three sections. Under the three sections in section 4.1 the test for the classical liner regression model/CLRM were presented followed by the descriptive statistics of the dependent and independent variables under section 4.2 and then finally, the results of the regression analysis were presented under section 4.3.

4.1. CLRM Assumption and Diagnostic Test

In this study as mentioned in chapter three diagnostic tests were carried out to ensure that the data fits the basic assumptions of classical linear regression model. Hence, the following sections discuss results of the diagnostic tests (i.e., heteroscedasticity, autocorrelation, multicollinearity, normality and model specification test) that ensure whether the data fits the basic assumptions of classical linear regression model or not.

Test for Hetroscedasticity

Heteroscedasticity test is very important because if the model consists of heteroscedasticity problem, the OLS estimators are no longer BEST and error variances are incorrect, therefore the hypothesis testing, standard error and confident level will be invalid. A white test has been made, to ensure that this assumption is not violated. The hypothesis for the heteroscedasticity test was formulated as follow;

H_0: There is no heteroscedasticity problem

H_1: There is heteroskedasticity problem

$\alpha = 0.05$

Decision Rule: Reject H_0 if P value is less than significant level 0.05. Otherwise, do not reject H_0.

Table 4: Result of Hetroscedasticity Test

White Test	P-value	Decision Rule
F-statistic	0.5266	Do not Reject the H_0
Obs*R-squared	0.4976	Do not Reject the H_0
Scaled explained SS	0.8328	Do not Reject the H_0

Source: Own computation (Developed for the research)

As shown in table 4, all versions of the white test statistic (F-statistic, Chi-Square and Scaled explained SS) gave the same conclusion that there was no evidence for the presence of heteroscedasticity, since the p-values of 0.5266, 0.4976 and 0.8328 for F-statistic, Chi-Square and Scaled explained SS respectively were in excess of 0.05, so the null hypothesis should not be rejected.

Test for Autocorrelation

It is assumed that the distribution errors are uncorrelated with one another and that the errors are linearly independent of one another. Autocorrelation error occurs when there is a serial correlation between residuals and their own past values. In this study, Breusch Godfrey Serial Correlation LM Test is used to carry out the autocorrelation test. The p-value is obtained to examine whether the autocorrelation problem occurs in the model. If the p-value is more than 5% significant level, it implies that there is no autocorrelation problem in the model.

The hypothesis for the model specification test was formulated as follow;

H_0: There is no autocorrelation problem.

H_1: There is autocorrelation problem.

$\alpha = 0.05$

Decision Rule: Reject H_0 if P value is less than significant level 0.05. Otherwise, do not reject H_0.

Table 5: Result of Autocorrelation Test

Variables	P-value	Decision Rule
Breusch-Godfrey Serial Correlation LM Test	0.2351	Do not Reject the H_0

Source: Own Computation (Developed for the research)

From table 5, it can be concluded that this research do not reject null hypothesis (H_0), since the p-value is 0.2351, which is greater than significance level of 0.05. Thus, it can be concluded that the model does not consists of autocorrelation problem.

Test for Normality

Normality test is used to determine whether the error term is normally distributed. One of the most commonly applied tests for normality is the Bera-Jarque (BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments - the mean and the variance (Brooks, 2008).

The hypothesis for the normality test was formulated as follow

H_0: Error term is normally distributed

H_1: Error term is not normally distributed

$\alpha = 0.05$

Decision Rule: Reject H_0 if P value of JB less than significant level 0.05. Otherwise, do not reject H_0.

Table 6: Result of Normality Test

	Probability (P-value)	Decision Rule
Jarque Bera Test	0.1050	Do not Reject the H_0

Source: Own Computation (Developed for the research)

Table 6 indicated that distribution of the panel observation is symmetric about its mean. The Jarque-Bera statistic has a P-value of 0.1050 which implies that the p-value for the Jarque-Bera test is greater than 0.05 which indicates that there was no evidence for the presence of abnormality in the data. Thus, the null hypothesis that the data is normally distributed should not be rejected since the p-value was in excess of 0.05.

Test for Multicollinearity

According to Brooks (2008), multicollinearity will occur if some or all of the independent variables are highly correlated with one another. It shows the regression model has difficulty in explaining which independent variables are affecting the dependent variable. If multicollinearity problem is too serious in a model, either additional important variable should be added or unimportant independent variable should be dropped. Usually, as noted by Hair et.al (2006) correlation coefficient below 0.9 may not cause serious multicollinearity problem, in this study there is no correlation coefficient that exceeds 0.90. Accordingly, in this study there is no problem of multicollinearity which enhanced the reliability for regression analysis.

Table 7: Results of Multicollinearity Test

	CAP	OPE	LIQ	INDIV	CONC	GDP	INF	MS
CAP	1	0.0030	0.0883	-0.0721	-0.2428	-0.2641	0.0456	0.3164
OPE	0.0030	1	0.2151	-0.4018	-0.0073	0.0975	-0.1555	0.0584
LIQ	0.0883	0.2151	1	-0.5217	0.5377	0.3701	-0.0666	-0.4420
INDIV	-0.0721	-0.401	-0.5217	1	-0.3462	-0.1250	0.0204	0.0916
CONC	-0.2428	-0.007	0.5377	-0.3462	1	0.7001	-0.1039	-0.7976
GDP	-0.2641	0.0975	0.3701	-0.1250	0.7001	1	-0.4676	-0.7061
INF	0.0456	-0.155	-0.0666	0.0204	-0.1039	-0.4676	1	-0.0626
MS	0.3164	0.0584	-0.4420	0.0916	-0.7976	-0.7061	-0.0626	1

Source: Own computation (Developed for the research)

Table 7 above shows that there is no strong pair-wise correlation between the explanatory variables (CAP, OPE, LIQ, INDIV, CONC, GDP, INF, and MS). As a rule of thumb, inter-correlation among the independent variables above 0.90 signals a possible multicollinearity problem. In this study the highest correlation coefficient is 0.7976 between concentration and money supply. Thus, it can be concluded that almost all variables have low correlation power which implies no multicollinearity problem in the

explanatory variables selected to determine profitability of private commercial banks in Ethiopia.

Model Specification

Model specification error occurs when omitting a relevant independent variable, including unnecessary variable or choosing the wrong functional form. When the omitted variable is correlated with the variable which included, the estimators will be biased and inconsistent and model specification error will tends to occur. If the omitted variable is not correlated with the included variable, the estimators are unbiased and consistent and model specification error will not occur. Therefore, in order to select a correct estimated model, the researcher had carry out the Ramsey-RESET Test to check on the model specification. The hypothesis for the model specification test was formulated as follow;

H_0: The model specification is correct.

H_1: The model specification is incorrect.

$\alpha = 0.05$

Decision Rule: Reject H_0 if P value is less than significant level 0.05. Otherwise, do not reject H_0.

Table 8: Result of Model Specification Test

Ramsey-RESET test	P-value	Decision Rule
t-statistic	0.5187	Do not Reject the H_0
f-statistic	0.5187	Do not Reject the H_0
Likelihood ratio	0.4815	Do not Reject the H_0

Source: Own computation (Developed for the research)

From table 8, it can be concluded that this research do not reject null hypothesis (H_0), since the p-value is 0.5187, 0.5187 and 0.5187 for t-statistic, f-statistic and Likelihood ratio which is greater than significance level of 0.05. Thus, it can be concluded that the model specification is correct from year 2005 to 2015.

Model Selection (Random Effect versus Fixed Effect Models)

To test the relationship between these commercial banks profitability (ROA) and identified profitability determinants, the theoretical model is developed based on the finance theory from the methodological part of this study. The important issue from the equation panel model is it is not specified whether it is fixed effects or random effects model. So the focal point the researcher concern here is, to examine whether individual effects are fixed or random. Because, there are broadly two classes of panel data estimator approaches that can be employed in empirical research: fixed effects models and random effects models. This also requires the high concern when the researcher employed the panel data approaches.

According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model (FEM) and random effect model (REM). Hence the choice here is based on computational convenience. On this score, FEM may be preferable. Since the number of time series (i.e. 11 year) is greater than the number of cross-sectional units (i.e. 6 commercial banks), FEM is preferable in this case.

According to Brooks (2008); Verbeek (2004) and Wooldridge (2006), it is often said that the REM is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a FEM is more plausible when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was not selected randomly and equals to the sample frame FEM is appropriate.

4.2. Descriptive statistics

Table 9 presents the outcomes of the descriptive statistics for main variables involved in the regression model. Key figures, including mean, median, standard deviation, minimum and maximum value were reported. This was generated to give overall description about data used in the model and served as data screening tool to spot unreasonable figure.

Table 9: Summary of descriptive statistics for dependent and independent variables

Variables	Observation	Mean	Median	Max	Min	Sta. Dev
ROA	66	0.0287	0.0296	0.0402	0.0034	0.0063
CAP	66	0.1283	0.1190	0.1921	0.0711	0.0302
OPE	66	0.3252	0.3129	0.6681	0.2244	0.0681
LIQ	66	0.6382	0.6015	0.9765	0.3619	0.1380
INDIV	66	0.5146	0.5074	0.7420	0.3072	0.1006
CONC	66	0.8292	0.8143	0.8852	0.7896	0.0307
GDP	66	0.1074	0.1060	0.1260	0.0870	0.0103
INF	66	0.1622	0.1350	0.3640	0.0280	0.1083
MS	66	11.0683	11.0188	11.5690	10.6044	0.3207

Source: Financial statements of banks, NBE reports, MoFEC reports and own computation

As can be seen from table 9, for the total sample, the mean of ROA was 2.8% with a minimum of 0.3% and a maximum of 4%. This indicates that, from the sampled Ethiopian private commercial banks, on average they earn 2.7 % of profit tax and the most profitable bank earned 4.6% of profit after tax for a single birr invested in the assets of the firm. On the other hand, the least profitable bank of the sampled banks earned 0.3% of profit after tax for a single birr invested in the assets of the firm. The standard deviation statistics for ROA was (0.0063) which indicates that the profitability variation between the selected banks was very small. The result implies that these banks need to optimize the use of their assets to increase the return on their assets.

Regarding the explanatory variables of the model there are some interesting statistics that have to be mentioned. Despite the small dispersion in the minimum and maximum observation of ROA there could be seen relatively high variation in the equity to asset ratio. On average, the equity-to-asset ratio equals 12.83% with a maximum of 19.21%, which was considerably above the statutory requirement of 8% set by NBE based on Basel II recommendation, while the minimum value was 11.9%. The standard deviation statistics for capital strength was 0.03 which shows the existence of relatively higher

variation of equity to asset ratio between the selected banks compared to the variation in ROA. On the other hand, the cost-to-income ratio indicated by the range between 66.81% and 22.4%. The mean of the cost-to-income ratio equals 32.51%. The relatively higher range between the minimum and maximum value implies that the most efficient bank has a quite substantial cost advantage compared to the least efficient bank.

Furthermore, the outputs of the descriptive statistics indicate that, the ratio of Advance to Deposit was 63.82%, on average, with a minimum of 36.19% and a maximum of 97.65%.This indicates that private commercial banks in Ethiopia use 63.82% of customer deposit on lending. This shows that banks keep more than the statutory liquidity requirement. Customer deposit is one of the cheapest sources of fund due to the high margin between deposit and lending rate that banks utilize to generate income. Moreover, the figure shows that private commercial banks in the country target domestic resources, mainly customer deposit, for their banking business.

The bank concentration variable indicates that the minimum industry concentration is 78.96% while the maximum is 88.55%. The banking industry has generally remained highly concentrated over the period with a mean concentration of 82.24. The descriptive statistics indicate that, the ratio of non-interest income to total Income was 51.46%, on average, with a minimum of 30.72% and a maximum of 74.20%.This indicates that private commercial banks in Ethiopia on average earn 51.46% of their income from non-interest income.

Table 9 also shows that the mean real GDP growth in Ethiopia for the last eleven years was 10.7%, with a maximum of 12.6% and a minimum of 8.7%. Table 8 also presents for GDP a small standard deviation of 0.0103; this implies that economic growth in Ethiopia during the period of 2005 to 2015 remains reasonable stable and the result was more or less in agreement with the government's report regarding economic growth. The other macro-economic variable employed in this study INFL, had somewhat a higher standard deviation (0.1082) compared to GDP; this implies that inflation rate in Ethiopia during the study period remains somewhat unstable. While the last macro-economic variable

employed in this study money supply had the highest standard deviation (0.3207) compared to all the other variables in the study.

4.3. Results and Discussion of regression analysis

The empirical evidence on the determinants of Ethiopian private commercial banks profitability is studied based on balanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment spanning from the period 2005 up to 2015 and a cross section segment which considered six private commercial banks, namely, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank. To test the relationship between these private commercial banks profitability and identified profitability determinant variables the following linear regression model is developed.

$$ROA = \beta 0 + \beta 1\ CAP + \beta 2\ OPE + \beta 3\ LIQ + \beta 4\ INDIV + \beta 5\ CONC + \beta 6 GDP + \beta 7\ INF + \beta 8\ MS + \varepsilon$$

Table 10: Result of Ordinary Least Square (OLS) Model

Independent Variable	**Coefficient Value**	**P-Value**	**Sign**
Capital Adequacy	0.042908	0.0840**	Positive
Operational Efficiency	-0.062689	0.0000*	Negative
Liquidity Management	0.004669	0.2380	Positive
Income Diversification	0.020121	0.0008*	Positive
Concentration	0.075743	0.0033*	Positive
Gross Domestic Product (GDP)	-0.011696	0.8692	Negative
Inflation (INF)	0.000791	0.8671	Positive
Money Supply	0.007573	0.0052*	Positive
R-squared		0.8454	
Adjusted R-squared		0.8068	

Source: Developed for the research

Notes: Significant at 1%* and 10%**

The developed model by Ordinary Least Square (OLS) model:

ROA = -0.115171 + 0.042908CAP - 0.062689OPE + 0.004669LIQ + 0.020121INDIV + 0.075743CONC - 0.011696GDP + 0.000791INF + 0.007573MS

The estimation results of the operational panel regression model used in this study are presented in table 10. From table 10 the R-squared statistics and the adjusted-R squared statistics of the model was 84.54% and 80.68% respectively. The result of the R-squared indicates that the changes in the independent variables explain 84.54% of the changes in the dependent variable. That is capital adequacy, operational efficiency, Liquidity, income diversification; industry concentration, gross domestic product, inflation rate and money supply collectively, while the result of the adjusted-R squared indicates that the changes in the independent variables explain 80.68% of the changes in the dependent variable. That is capital adequacy, operational efficiency, Liquidity, income diversification; industry concentration, gross domestic product, inflation rate and money supply collectively explain 80.68% of the changes in ROA. Although, the remaining 15.46% and 19.32% of the change is explained by other factors which are not included in this study model, both the R-squared and the Adjusted R-squared values in this study are found to be sufficient enough to infer that the fitted regression line is very close to all of the data points taken together (has more explanatory power) For panel data, R-Squared greater than 20% is still large enough for reliable conclusions (Trivedi, 2009; Hsiao, 2007, cited in Nyamsogoro, 2010).

Based on the results shown in table 10, all bank-specific independent variables except liquidity had statistically significant impact on profitability. On the other hand, among the four external independent variables used in this study two were found to be significant while the other two were not. The significant variables are concentration & money supply while the insignificant variables are GDP and inflation.

Moreover, table 10 also shows that the coefficient of operational efficiency and GDP against ROA were negative since the coefficients for those variables are negative -0.062689 and -0.011696 respectively. This indicates that there was an inverse relationship between the aforementioned two independent variables and ROA. Thus the increase of those variables will lead to a decrease in ROA.

On the other hand, variables like capital adequacy, liquidity, income diversification, concentration, inflation and money supply had a positive relationship with profitability since their respective coefficients were 0.042908, 0.004669, 0.020121, 0.075743, 0.000791 and 0.007573. This revealed that there was a direct relationship between the above five independent variables and ROA. In general as per the regression results provided in table 10 among the regressor's used in this study five of them were significant.

In general, so far, the results of the documentary analysis which includes tests for the classical linear regression model, descriptive statistics & regression analysis have been presented. The results of the tests for the classical linear regression model showed that the data fit the basic assumptions of CLRMs. On the other hand, the remaining results of the documentary analysis were used to assess the link that exists between bank-specific, industry-specific and macro-economic determinants of bank profitability. The following section demonstrates the impact of each explanatory variable on Ethiopian private commercial banks profitability.

Capital Adequacy

The coefficient of capital Adequacy which is measured by the equity to asset ratio was positive and statistically significant at 10% significance level (p-value=0.0840). The positive coefficient for capital strength was in favor of the signaling or bankruptcy costs hypotheses and in opposite to the risk-return trade-off hypothesis. Moreover, the coefficient of the ratio of equity to asset which was the second highest positive coefficient as compared to other variables shows that an increase in capital will result in increased profitability. This is in line with the expectation as a bank with a sound capital

position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. So from the findings we can conclude that capital adequacy was one of the main determinants of profitability of private banks in Ethiopia. Further, the finding was also consistent with previous studies of Kosmidou et.al, (2007), Athanasoglou et al, (2005), Trujillo-Ponce (2011), Amdemichael (2012) and Alemu (2015) and it also indicates that well capitalized Ethiopian private commercial banks face lower costs of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.

Operational efficiency

The coefficient of the ratio of cost to income, which provides information on the efficiency of the management regarding expenses relative to income, was negative and statistically significant at 1% significance level (p-value= 0) which is in line with a prior expectation and makes the variable an important determinant of Ethiopian private banks profitability. This finding was consistent with many previous studies, e.g. Athanasoglou et al, (2005), Sufian et.al, (2008) and Suzuki et.al, (2011). For instance, Sufian et.al, (2008) in their work on the Philippines banks realized as cost to income ratio exhibits a negative and significant impact on Philippines banks profitability. The results imply that an increase (decrease) in these expenses reduces (increases) the profits of financial institutions operated in Philippines. Coming back to this particular study, the result revealed that in the context of the Ethiopian private banks like that of Sufian et.al, (2008), Athanasoglou et al, (2005) and Suzuki et.al, (2011) results, the ratio of cost to income exhibits a negative and significant impact on the ROA. The negative relationship between operational efficiency and profitability in Ethiopia private commercial banks indicates that increased efficiency i.e. reducing operating expense will result in higher profitability for the banks.

Liquidity

Advances over Deposits were used as a proxy for liquidity in the model. It indicates the percentage of bank's loans funded through deposits. Liquidity measures the ability of an

organization to meet its obligations and the solvency of organization (Khan & Jain, 2008). The result indicates that the liquidity variable was positive and insignificant at 1%, 5% and 10% significance level (p-value = 0.2380). This implies that when a bank transforms a higher percentage of its deposit in to loans, the bank is expected to earn more profits. Thus, the higher the Liquidity ratio the higher the profitability of a bank and the higher the liquidity risk for the bank. The higher amount of loans against per birr deposit increases bank liquidity risk. The result is in line with the findings of samad (2015), who concluded in his study that liquidity positively correlates with profitability.

Income diversification

The ratio of non-interest income to gross income which is a measure of diversification and business mix have a positive effect on profitability, which is in agreement with a prior expectation. In addition, this variable was also statistically significant at 1% significance level (p-value = 0.0008) in explaining the variability in ROA of private commercial banks in Ethiopia. Thus, INDIV was considered as a vital driver of the performance of private Commercial banks in Ethiopia. That means in the last eleven years revenue generated from non-traditional activities were one of the relevant drivers of their performance in general and profitability in particular. This result was also consistent with the previous findings of Sufian et.al, (2009), Flamini et.al, (2009) and Trujillo-Ponce (2012).

Industry concentration

Concerning the coefficient of the only industry specific variable used in this study concentration is positive as hypothesized, and statistically significant at 1% significance level (p-value=0.0004) Hence, this support the SCP hypothesis. The structure-conduct-performance hypothesis (also referred to as the market-power hypothesis) states that a more concentrated sector favors bank profitability motivated by the benefits of greater market power. The finding is consistent with the findings of Athanasoglou et.al, (2006) and Suzuki et.al, (2011) which found evidence of the structure-conduct-performance (SCP) hypothesis, indicated by a positive and significant effect of industrial concentration on profitability.

Gross domestic product

One would expect that the impact of GDP on profitability is positive and significant. However, it was not statistically significant even at 10% significance level (p-value = 0.8692), insinuating that its influence is negligible. Moreover, the insignificant parameter indicates that the GDP does not affect Ethiopian private commercial banks profitability. Thus the hypothesis that states there is a significant relationship between GDP and profitability may be rejected or data did not support the hypothesis. Referring to previous studies, the results defies logic and does not conform with earlier findings by Obamuyi (2013) and Athanasoglou et.al, (2006) which agrees on the positive association between economic growth and the performance of the financial sector but it is consistent with the finding of Krakah et.al, (2010) and Frederick (2014) who found that there was no significant relationship between GDP and banks profitability.

Inflation

High inflation rate is associated with higher costs as well as higher income. If a bank's income rises more promptly than its costs, inflation is expected to exert a positive effect on profitability as inflation was anticipated which gave banks the opportunity to adjust the interest rates accordingly. On the other hand, a negative coefficient is expected when its cost increase faster than its income (Eden, 2014). Theories suggest that, inflation has a negative impact on commercial banks profitability

The regression result of this study provides us a positive insignificant value, with a coefficient of 0.000791 and probability value of 0.8671. This is due to the fact that, commercial banks are given discretion to set their lending interest rate freely, and accordingly when they anticipate a high inflation, they adjust their lending interest rate freely and compensate their profitability. The finding of this study is in line with, the findings of Demirguc-Kunt & Huizinga, (1999), Samuel (2015) and Eden (2104).

Money Supply

The natural logarithm of money supply was incorporated into the model to analyze the impact of money supply on private commercial banks profitability. According to the quantity theory of money, changes in the money supply can induce changes in the nominal GDP and price levels. It is generally expected that the increase in money supply should impact favorably on bank profitability. The result indicates that the M2 variable was positive and significant at 1% significance level (p-value=0.0052). This finding was consistent with Karkrah et.al, (2010) who concluded in their study that Money supply positively correlates with profitability.

Chapter Five

Conclusions and Recommendations

The previous chapter presented the analysis of the findings and discussions of the study. The purpose of this chapter is to discuss the conclusions and recommendations. Accordingly, the chapter is organized in two sections, the first section presents the conclusions of the study and the second section presents the recommendations provided based on the findings of the study.

5.1. Conclusions

This broad objective of this study was to identify the main bank-specific, industry-specific and macro-economic factors that can affect Ethiopian private commercial banks profitability and to what extent these determinants exert impact on Ethiopian Private commercial Banks' profitability. In doing so, previous studies on bank profitability have been reviewed and it is summarized that the profitability of bank is usually expressed as a function of internal and external determinants. The internal determinants refers to the factors originate from bank accounts (balance sheets and/or profit and loss accounts) and therefore could be termed bank-specific determinants of profitability. The external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions. Empirical results from previous studies conclude that internal factors explain a large proportion of banks profitability; nevertheless external factors have also an impact on the performance.

A number of explanatory variables have been proposed for both categories, according to the nature and purpose of each study. Studies dealing with internal determinants employ variables such as size, capital, asset quality, income diversification or costs etc while for external determinants, several factors have been suggested as impacting on profitability and these factors can further distinguish between control variables that describe the macroeconomic environment, such as inflation, interest rates and economic growth, and variables that represent market characteristics.

Based on the review of previous studies and banking area theories, the present study investigated the impact of some selected bank-specific, industry-specific and macro-economic factors on the profitability of the Ethiopian Private commercial Banks over the period of 2005 to 2015 with a sample size of six Ethiopian Private commercial Banks. The bank-specific factors that were used in this study are: - capital adequacy, operational efficiency, liquidity and income diversification. On the other hand the study used only one industry-specific variable and three macroeconomic conditions indicator variables. The industry specific variable was concentration while the macroeconomic variables were GDP, inflation and broad money supply. To comply with the objective of this research, the paper used quantitative research method. The quantitative data were mainly obtained from the banks themselves, from NBE and MoFEC through documentary analysis in order to identify and measure the determinants of banks profitability. In specific, multiple regression analysis is adopted to measure the effect of determinants on banks profitability quantitatively.

The empirical findings on the impact of private bank profitability in Ethiopia for the sample suggest the following conclusions.

First, among the bank specific variables as expected, the result showed a positive relationship between capital strength and profitability with strong statistical significance. The coefficient for the ratio CAP is the second highest positive, showing that an increase in capital strength will result in increased profitability. This is in line with the expectation as a bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. The result between operational efficiency and profitability showed a negative relationship with strong statistical significance. This shows that minimizing operating costs in Ethiopia would certainly improve the private commercial banks performance while the result for income diversification showed a positive relationship between income diversification and profitability as expected with strong statistical significance. The coefficient of the ratio is the highest positive, showing that an increase in non-interest income will result in

increased profitability. The only insignificant variable from the bank specific variables is liquidity which showed a positive but insignificant relation between liquidity and profitability.

Second, the only industry specific variables employed in the study i.e. market concentration showed positive relationship between concentration and profitability as expected with strong statistical significance. The positive relationship between concentration and profitability is in favor of the structure-conduct-performance (SCP) hypothesis.

Lastly, among macroeconomic variables the money supply (MS) has a positive impact on profitability as expected and has been a significant driver in the performance of private commercial banks in Ethiopia. Increasing the amount of money in circulation would imply private commercial banks in Ethiopia having access to these funds and having the opportunity to create wealth while both GDP and inflation were found to have no significant effect on the profitability of private commercial banks profitability in Ethiopia.

5.2. Recommendation

Based on the findings of the study the following possible recommendations were forwarded:

Banks capital strength, operational efficiency, Income Diversification, Concentration, and Money Supply are significant key drivers of profitability of private commercials banks in Ethiopia. Indeed focusing and reengineering the institutions alongside these indicators could enhance the profitability as well as the performance of the commercial banks in Ethiopia.

The explanatory powers of bank-specific variables are far more important in explaining the variability in ROA for private commercial banks in Ethiopia than external variables. The following recommendations are put forward based on the findings of the research.

- There is need for private commercial banks to consider raising their capital more as it is found to have influence on profitability. Private commercial Banks should look in to reducing the amount they pay to shareholders as dividend, instead using it to raise the capital in addition to selling shares. The government should also continue to encourage and demand banks to raise their capital.

- Private commercial banks should also give more consideration to reducing their operating expenses specially their salary and rent expense as it is found to have the highest negative influence on profitability.

- Commercial private banks are also advised to increase the income generated from non-traditional banking activities like fees and commissions as it is found to have the highest positive influence on banks profitability.

- Concentration has a positive effect on the profitability of private commercial banks so banks should maximize this opportunity before foreign banks enter the market.

- Among the macroeconomic variables included in this study, only money supply exists as a significant key driver of profitability of Ethiopian private commercial banks. The government monetary policy should consider the effect of money supply on the profitability of private commercial banks in Ethiopia also private banks should not ignore the macroeconomic indicators when strategizing to improve on their profits or performance. Thus, private banks in Ethiopia should not only be concerned about internal structures and policies, but they must consider both the internal environment and the macroeconomic environment together in fashioning out strategies to improve their performance or profits.

Future Research Recommendations

This study sought to investigate the factors that influence profitability of private commercial banks in Ethiopia. However, the variables used in the statistical analysis did not include all factors that can affect Ethiopian banks profitability. Thus, future research could incorporate external factors such as government regulation like holding 40% of their term loan portfolio in Short term loan have effect on their liquidity & profitability.

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Appendices

Appendix –I: Tests for Heteroskedasticity: White

Heteroskedasticity Test: White

F-statistic	0.895241	Prob. F(8,57)	0.5266
Obs*R-squared	7.367100	Prob. Chi-Square(8)	0.4976
Scaled explained SS	4.260966	Prob. Chi-Square(8)	0.8328

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/15/17 Time: 19:43
Sample: 1 66
Included observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.13E-05	9.18E-05	-0.341040	0.7343
CAP^2	2.66E-05	0.000176	0.151162	0.8804
OPE^2	-2.35E-06	2.70E-05	-0.087044	0.9309
LIQ^2	-4.94E-06	1.02E-05	-0.482020	0.6316
INDIV^2	1.36E-05	1.73E-05	0.784885	0.4358
CONC^2	8.68E-05	5.41E-05	1.604968	0.1140
GDP^2	-0.000909	0.001457	-0.624045	0.5351
INF^2	-4.91E-05	5.02E-05	-0.977971	0.3322
MS^2	-7.70E-08	4.66E-07	-0.165103	0.8694

R-squared	0.111623	Mean dependent var	8.39E-06
Adjusted R-squared	-0.013062	S.D. dependent var	1.05E-05
S.E. of regression	1.06E-05	Akaike info criterion	-19.94506
Sum squared resid	6.41E-09	Schwarz criterion	-19.64647
Log likelihood	667.1869	Hannan-Quinn criter.	-19.82707
F-statistic	0.895241	Durbin-Watson stat	2.347393
Prob(F-statistic)	0.526623		

Appendix –II: Tests for autocorrelation: Breusch-Godfrey

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.378409	Prob. F(7,50)	0.2351
Obs*R-squared	10.67623	Prob. Chi-Square(7)	0.1534

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 01/15/17 Time: 20:04
Sample: 1 66
Included observations: 66
Presample missing value lagged residuals set to zero.

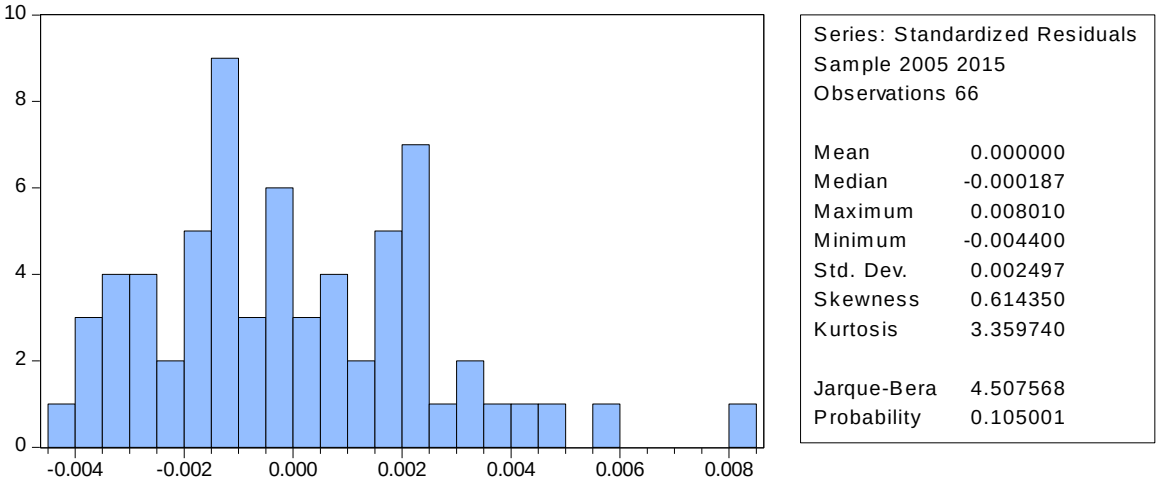
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011875	0.050496	0.235163	0.8150
CAP	0.000486	0.015066	0.032280	0.9744
OPE	-0.000607	0.006553	-0.092624	0.9266
LIQ	3.43E-05	0.003850	0.008918	0.9929
INDIV	-0.000336	0.005452	-0.061578	0.9511
CONC	-0.002158	0.025634	-0.084188	0.9332
GDP	-0.019291	0.082290	-0.234428	0.8156
INF	-0.003748	0.005428	-0.690563	0.4930
MS	-0.000643	0.002794	-0.230040	0.8190
RESID(-1)	0.381299	0.147985	2.576602	0.0130
RESID(-2)	-0.021229	0.160668	-0.132129	0.8954
RESID(-3)	-0.103216	0.156316	-0.660299	0.5121
RESID(-4)	-0.090322	0.158586	-0.569545	0.5715
RESID(-5)	0.233111	0.155578	1.498355	0.1403
RESID(-6)	-0.128055	0.156123	-0.820223	0.4160
RESID(-7)	0.041951	0.153079	0.274048	0.7852

R-squared	0.161761	Mean dependent var	-4.23E-17
Adjusted R-squared	-0.089711	S.D. dependent var	0.002919
S.E. of regression	0.003047	Akaike info criterion	-8.541791
Sum squared resid	0.000464	Schwarz criterion	-8.010965
Log likelihood	297.8791	Hannan-Quinn criter.	-8.332036
F-statistic	0.643258	Durbin-Watson stat	1.944770
Prob(F-statistic)	0.824505		

Appendix –III: Tests for Multicollinearity: Pair-wise correlation coefficients

	CAP	OPE	LIQ	INDIV	CONC	GDP	INF	MS
CAP	1	0.0030	0.0883	-0.0721	-0.2428	-0.2641	0.0456	0.3164
OPE	0.0030	1	0.2151	-0.4018	-0.0073	0.0975	-0.1555	0.0584
LIQ	0.0883	0.2151	1	-0.5217	0.5377	0.3701	-0.0666	-0.4420
INDIV	-0.0721	-0.401	-0.5217	1	-0.3462	-0.1250	0.0204	0.0916
CONC	-0.2428	-0.007	0.5377	-0.3462	1	0.7001	-0.1039	-0.7976
GDP	-0.2641	0.0975	0.3701	-0.1250	0.7001	1	-0.4676	-0.7061
INF	0.0456	-0.155	-0.0666	0.0204	-0.1039	-0.4676	1	-0.0626
MS	0.3164	0.0584	-0.4420	0.0916	-0.7976	-0.7061	-0.0626	1

Appendix – IV: Tests for Normality: Bera-Jarque test



Appendix – V: Tests for Model Specification: Ramsey Reset Tests

Ramsey RESET Test
Equation: EQ01
Specification: ROA C CAP OPE LIQ INDIV CONC GDP INF MS
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.649525	56	0.5187
F-statistic	0.421883	(1, 56)	0.5187
Likelihood ratio	0.495356	1	0.4815

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	4.14E-06	1	4.14E-06
Restricted SSR	0.000554	57	9.72E-06
Unrestricted SSR	0.000550	56	9.82E-06
Unrestricted SSR	0.000550	56	9.82E-06

LR test summary:

	Value	df
Restricted LogL	292.0562	57
Unrestricted LogL	292.3039	56

Unrestricted Test Equation:
Dependent Variable: ROA
Method: Least Squares
Date: 01/15/17 Time: 19:47
Sample: 1 66
Included observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.181123	0.081332	-2.226964	0.0300
CAP	0.112992	0.037916	2.980017	0.0043
OPE	-0.060396	0.015984	-3.778465	0.0004
LIQ	0.005377	0.004294	1.252214	0.2157
INDIV	0.037359	0.013615	2.743895	0.0081
CONC	0.122555	0.046839	2.616522	0.0114
GDP	-0.030395	0.079487	-0.382389	0.7036
INF	0.002282	0.005592	0.407973	0.6848
MS	0.008818	0.003932	2.242832	0.0289
FITTED^2	-4.580949	7.052764	-0.649525	0.5187

R-squared	0.790437	Mean dependent var	0.028786
Adjusted R-squared	0.756757	S.D. dependent var	0.006353
S.E. of regression	0.003133	Akaike info criterion	-8.554662
Sum squared resid	0.000550	Schwarz criterion	-8.222896
Log likelihood	292.3039	Hannan-Quinn criter.	-8.423566
F-statistic	23.46922	Durbin-Watson stat	1.357264
Prob(F-statistic)	0.000000		

Appendix – VI: Descriptive Analysis of dependent and independent variables

Variables	Observation	Mean	Median	Max	Min	Sta. Dev
ROA	66	0.0287	0.0296	0.0402	0.0034	0.0063
CAP	66	0.1283	0.1190	0.1921	0.0711	0.0302
OPE	66	0.3252	0.3129	0.6681	0.2244	0.0681
LIQ	66	0.6382	0.6015	0.9765	0.3619	0.1380
INDIV	66	0.5146	0.5074	0.7420	0.3072	0.1006
CONC	66	0.8292	0.8143	0.8852	0.7896	0.0307
GDP	66	0.1074	0.1060	0.1260	0.0870	0.0103
INF	66	0.1622	0.1350	0.3640	0.0280	0.1083
MS	66	11.0683	11.0188	11.5690	10.6044	0.3207

Appendix – VII: Regression Results

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/15/17 Time: 19:50
Sample: 2005 2015
Periods included: 11
Cross-sections included: 6
Total panel (balanced) observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.115171	0.046683	-2.467088	0.0170
CAP	0.042908	0.024358	1.761579	0.0840
OPE	-0.062689	0.007036	-8.909607	0.0000
LIQ	0.004669	0.003911	1.193716	0.2380
INDIV	0.020121	0.005678	3.543823	0.0008
CONC	0.075743	0.024558	3.084213	0.0033
GDP	-0.011696	0.070678	-0.165483	0.8692
INF	0.000791	0.004705	0.168128	0.8671
MS	0.007573	0.002597	2.916290	0.0052

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.845492	Mean dependent var	0.028786
Adjusted R-squared	0.806865	S.D. dependent var	0.006353
S.E. of regression	0.002792	Akaike info criterion	-8.738227
Sum squared resid	0.000405	Schwarz criterion	-8.273755
Log likelihood	302.3615	Hannan-Quinn criter.	-8.554692
F-statistic	21.88861	Durbin-Watson stat	1.752245
Prob(F-statistic)	0.000000		