ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF PROFITABILITY OF COMMERCIAL BANKS IN ETHIOPIA (THE CASE OF SOME SELECTED BANKS)

BY

ALEM DIFABACHEW

July, 2017

ADDIS ABABA, ETHIOPIA

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APPROVED BY BOARD OF EXAMINERS

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Declaration

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Aregaseyoum (PhD). All sources of materials used for the thesis have been duly acknowledged, the researcher further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

AlemDifabachew _____

St. Mary's University, Addis Ababa July, 2017

ENDORSEMENT

This thesis has been submitted to St. Mary's university, school of Graduate Studies for examination with my approval as a university advisor.

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Advisor **Signature**

St. Mary's University, Addis Ababa July, 2017

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LIST OF ABBREVIATION AND ACRONYMS

CBE	COMMERCIAL BANK OF ETHIOPIA
DB	DASHEN BANK
AIB	AWASH INTERNATIONAL BANK
BOA	BANK OF ABYSINIA
WB	WEGAGEN BANK
NIB	NIB INTERNATIONAL BANK
CBO	COOPERATIVE BANK OF OROMIA
UB	UNITED BANK
ZB	ZEMEN BANK
OIB	OROMIA INTERNATIONAL BANK
CBB	CONSTRUCTION AND BUSINESS BANK
LIB	LION INTERNATIONAL BANK
BUIB	BUNNA INTERNATIOAL BANK
AB	ABAY BANK
BIB	BIRIHAN INTERNATIOAL BANK
AIB	ADDIS INTERNATIONAL BANK
EB	ENAT BANK
DGB	DEBUB GLOBAL BANK
NBE	NATIONAL BANK OF ETHIOPIA
OLS	ORDINARY LEAST SQUARES
GLS	GENERAL LEAST SQUARES
ROA	RETURN ON ASSET
IINCOME	INTEREST INCOME
NIINCOME	NONINTEREST INCOME
NIEXPENSE	NON INTEREST EXPENSE
ROE	RETURN ON EQUITY
FE	FIXED EFFECT
RE	RANDOM EFFECT
IAT	INCOME AFTER TA

ABSTRACT

The study examines the determinants of profitability of commercial banks in Ethiopia by using panel data of seven sample commercial banks out of seventeen commercial banks currently operated in Ethiopia over the period 2000-2014 since the data is secondary in nature the quantitative research approach was used besides , the fixed effect model was used. The factor used in this study includes bank size, capital adequacy, interest income, non-interest income. Interest expense and non-interest expense and return on asset (ROA) were used to measure the bank's profitability. The finding of the study shows that bank size, capital adequacy, interest income and non-interest income have statistically significant and positive relationship with profitability. On the other hand Interest expense and non-interest expense has negative and statistically significant relationship with banks' profitability. The study suggests management bodies of commercial bank should strive to strengthen the identified significant factor banks size, capital adequacy non-interest income and interest income as this will enhance the performance of the banks. Moreover, commercial banks need to invest in recent technologies and management skills which minimize operational expense as this will affect positively on their performance.

Key words: profitability, commercial banks, returns on asset

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A number of other studies have examined bank profitability in an effort to isolate the factors that account for differences in bank profitability. Studies have linked bank earnings and various aspects of bank operating performance to profitability. Set of studies focused on the relationship between bank earnings performance and balance sheet structure and profitability. Different literature examined the impact of regulatory and macroeconomic factors on overall bank profitability. The main conclusion emerging from past studies is that internal factors explain a large proportion of banks profitability; nevertheless external factors have also had an impact on bank profitability.

According to Levin (1997) the banking sector is an integral part of an economy. The study shows an efficient banking sector contributes positively to economic development by promoting capital accumulation through supply of credit. The sector mobilizes and allocates savings, supports trade, helps in diversification and hedging of risk, and contributes to overall economic growth of a country through provision of credit to the private sector (Levin, 1997). The study recommends this sector to continue providing these services, it must be stable and be able to make profits from their operations. Besides, the commercial banks are the major transmitters of monetary policies implemented by the Central Bank in the economy (Siddiqui and Shoaib, 2011).

Susan(2014) using balanced panel data of top six commercial banks in Kenya for the period of 2008-2013 and by use of the Generalized Least Square(GLS) estimated independent variables such as bank size, capital adequacy, ownership, loan, operating expense and diversification impacts on profitability of commercial banks using return on assets(ROA) as a dependent variable. Result this paper using descriptive and correlation analysis shows that bank size, capital strength, ownership, expense, loan and non-interest income are significant factors in determining the profitability of the banks.

Ani et al(2012) identified internal factors of the bank profitability with the data concerning total asset, net profit, loan and advances, and total equity for 10 years from period 2001 to 2010 from 15 Nigerian banks with observation of 147 estimated by regression analysis using return on asset(ROA) as the major metric for measuring profitability. According to the study these internal factors are management controllable factors, bank specific financial ratios representing size, asset composition and quality, and capital adequacy.

Sehrish et al(2011) identified both internal and external factors that determine profitability of commercial banks using data from 15 top banks of Pakistan from period 2005 to 2009. The study used bank size, capital, loan and deposit as an independent variables and return on asset, return on equity, return on capital employed, and net interest margin as dependent variables. The result of the study shows that bank size, loan and deposit have positive relationship with return on asset while capital has negative relationship with return on asset.

Usman(2014) analyzed internal factors affecting profitability of commercial banks in Pakistan using panel data that covers period of 4 years from 2009 to 2012 by descriptive analysis, pearson correlation, and regression analysis. The study used cost efficiency, liquidity, capital adequacy, deposit and bank size as an independent variables and return on asset as a dependent variable. According to the study cost efficiency, capital adequacy, deposit and bank size are major internal factors.

Saira Javaid et.al (2011) examined the profitability of top 10 the commercial banks of Pakistan for the period of 2004-2008. Pooled ordinary least square method has been used to check the impact of internal factors includes assets, loan, equity and deposits on the profitability of banks on dependant variable called return on asset (ROA).The study found that internal factors stated above affect the bank's profitability. Bank size or total assets does not lead any profitability of commercial banks but equity and deposits have a significant influence on the profitability of commercial banks.

1.2. Overview of Banking Sector in Ethiopia

The agreement that was reached in 1905 between Emperor Minilik II and Mr.MaGillivray, representative of the British owned National Bank of Egypt marked the introduction of modern

banking in Ethiopia. Following the agreement, the first bank called Bank of Abyssinia was inaugurated in February 16, 1906 by the Emperor. Thus by 1931 Bank of Abyssinia was legally replaced by Bank of Ethiopia shortly after Emperor Haile Selassie came to power. Bank of Ethiopia took over the commercial activities of the Bank of Abysinia and was authorized to issue notes and coins. *(www.nbe.gov.et)*

The Ethiopian Monetary and Banking law that came into force in 1963 separated the function of commercial and central banking creating National Bank of Ethiopia and give birth to commercial Bank of Ethiopia. The first privately owned bank, Addis Ababa Bank Share Company, was established on Ethiopians initiative and started operation in 1964 with a capital of 2 million. Following the declaration of socialism in 1974 the government extended its control over the whole economy and nationalized all large corporations. Accordingly, the three private owned banks, Addis Ababa Bank, Banco di Roma and Banco di Napoli Merged in 1976 to form the second largest Bank in Ethiopia called Addis Bank. Consequently Addis Bank and Commercial Bank of Ethiopia S.C. were merged to form the sole commercial bank in the country till the establishment of private commercial banks in 1994. *(www.nbe.gov.et)*

There was also the Saving and Mortgage Corporation of Ethiopia whose aims and duties were to accept savings and trust deposits account and provide loans for the construction, repair and improvement of residential houses, commercial and industrial buildings and carry out all activities related to mortgage operations, until its changed to its current name ,Construction and Business Bank. On the other hand, there was a bank called Agricultural Bank that provides loan for the agricultural and other relevant projects established in 1945 and operated until it was replaced by its successor Ethiopian Agriculture and commerce bank in 1950.In 1979, Ethiopian Agriculture and commerce bank was replaced by Agriculture and industry development bank, which was then renamed to the present, Development Bank of Ethiopia. *(www.nbe.gov.et)*

Subsequent to the demise of the Dergue regime in 1991, EPRDF declared a liberal economy system. Consequently, the first private bank, Awash International Bank was established in 1994. There were 16 private and 2 government-owned commercial banks operating in Ethiopia at 2015/2016 budget year. These banks include; Abay Bank S.C (est. 2010), Addis International bank S.C(est. 2011), Awash International Bank(est. 1994), Bank of Abyssinia(est. 1996),

Berhan International Bank(est. 2010), Bunna International Bank(est. 2009), Commercial Bank of Ethiopia(est. 1963), Construction and Business Bank(est. 1983), Cooperative Bank of Oromia(est. 2005), Dashen Bank(est. 1996), Debub Global Bank(est. 2012), Enat Bank(est. 2013), Lion International Bank(est. 2006), Nib International Bank(est. 1999), Oromia International Bank(est. 2008), United Bank(est. 1998), Wegagaen Bank(est. 1997), and Zemen Bank (est. 2009)(Wikipedia.org 2015). Construction and Business Bank merged to Commercial Bank of Ethiopia.

1.3. Statement of the Problem

Although there is abundant literature on determinants of profitability of commercial banks, there is no conclusive empirical evidence as to which determinants are of the most significance and their effects on profitability of the banks. There is greater consensus about some determinants, however, in the bulk of the literature in as much as there is stronger evidence about the significance of some variables and their possible effects, such as bank size, loan, interest and noninterest incomes, deposit, and noninterest expense. Even though, unanimity does not exist because when it is disaggregated or other factors added, as determinants affect each country, region and time period in a different way. Flamini et al. (2009) asserts that issue related to the determinants of profitability is multidimensional, because different types of motives work behind the decision of profit maximization in banking industry. For example, some banks seek large deposits and some of them seek the reduction of expenses. Thus, candidates for being the determinants of profitability might be multiple. In fact, the literature on profitability of commercial banks has been thickening day by day to identify the determinants of profitability of commercial banks.

Although there is consensus on a few variables as the major determinants of profitability of commercial banks in Ethiopia, such as the size of the bank and deposit, that have been conducted by Belayneh (2011) and Habtamu (2012) regarding the other variables, such as the loan and noninterest income in determining profit are still unexplored or sometimes it was wrongly predicted. As a result, empirical findings on the determinants of profitability of commercial banks are quite chaotic and misleading sometimes. This necessitates undertaking more and more empirical study with well-defined variables and new data sets to clearly understand the determinants of profitability of commercial banks in Ethiopia. Among those determinants that

have begun to take prominence, the study looks those determinants such as bank size, , non-interest expense, interest expense non-interest income, capital adequacy and interest income which are significant and why.

1.4 Objective of the Study

1.4.1General Objective of the Study

The objective of this study is to identify determinants of profitability of Commercial Banks in Ethiopia

1.4.2Specific objective of the study

.Specific objectives of this study focus on individual factors that determine profitability of the commercial banks stated as follows;

a. To assess the effect of bank size on the profitability of selected commercial banks in Ethiopia;
b. To evaluate the effect of non-interest expense on the profitability of selected commercial banks in Ethiopia;
c. To measure the effect the of non-interest income on the profitability of selected commercial banks in Ethiopia;
d. To measure the effect of interest income on the profitability of selected commercial bank in Ethiopia
e. To examine the effect of capital adequacy on the profitability of selected commercial banks in Ethiopia
f. To evaluate the effect of interest expense on the profitability of selected commercial banks in Ethiopia

1.5 Hypotheses

The study has developed the following hypothesis

H1: There is significant positive relationship between bank size and profitability of Ethiopian commercial banks.

H2: Capital Adequacy has significant positive effects on profitability of commercial banks.

H3: There is significant negative relationship between Non-interest Expense and commercial banks profitability in Ethiopia

H4: Interest income has significant positive impact on profitability of Ethiopian commercial banks.

H5: There is significant positive relationship between Non-interest income and profitability of commercial banks in Ethiopia

H6: There is significant negative relationship between interest Expense and commercial banks profitability in Ethiopia

1.6. Significance of the study

The significant of the study will includes

First the study will help other researchers as a source of reference and as a stepping stone for those who want to make further study on the area of profitability afterwards

Second the study will draw some conclusion and identifies the major factor affecting bank profitability significantly. Thus it will give signal to the management of the banks and policy makers to focus on the main determinants of commercial banks profitability to achieve organizational goal and to take remedial action

Third, it will give all stake holders in the area the opportunity to gain deep knowledge about the relationship between management controllable factors and banks profitability

Finally, This research does have significant role to play in shading light on how to better understand what determines financial institution particularly Commercial banks profitability (financial performance) in Ethiopia.

.1.7 Scope of the study

This study is about determinants of profitability of commercial banks using data from balance sheet from 2000-2014. These determinants are only bank specific; hence the study use balanced panel data. Banks that has fifteen years audited balance sheets are includes in the sample. As result 7 commercial banks were selected those are Awash International Bank (AIB), Bank of Abyssinia (BOA), Commercial Bank of Ethiopia (CBE), Dashen Bank (DB), Nib International Bank (NIB), United Bank S.c (UB), and Wegagen Bank (WB). Therefore, this study is limited to 7 commercial banks from period 2000 to 2014 about bank specific factors.

1.8 Limitation of the study

The researcher faced problem in data collection process because of stiff bureaucracy in the attempt of getting annual financial statement from the banks and National Bank of Ethiopia and unavailability of recent year banks financial statement forced to delay the time of completing the study.

. 1.9. Organization of the Research Report

The study is organized under five chapters.

Chapter one deals with the introductory part which bears background of the study, Statement of the problem, basic research questions, objectives, definition of terms, significance of the study, and scope of the study.

The second chapter deals with review of both theoretical and empirical literatures related to the study.

The third chapter deals with methods of the study which is about description and design of the research, source of data, data collection instruments, procedures of data collection, and methods of data analysis.

The fourth presents the results and discussions which summarize the results/findings of the study, and interpret and/or discuss the findings.

Finally, Chapter five is summary, conclusions and recommendations that comprise four sections, which include summary of findings, conclusions, limitations of the study and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Theoretical Literature

Banks make profits by charging an interest rate on their holdings of securities and loans that is higher than the expenses on their liabilities. In general terms, banks make profits by selling liabilities with one set of characteristics (a particular combination of liquidity, risk, size, and return) and using the proceeds to buy assets with a different set of characteristics. (Mishkin, (2004)

Banks obtain funds by borrowing and by issuing other liabilities such as deposits. These deposits include Checkable deposits (deposits on which checks can be written), savings deposits (deposits that are payable on demand but do not allow their owner to write checks), and time deposits (deposits with fixed terms to maturity).They then use these funds to acquire assets such as securities and loans. Bank capital is a cushion against a drop in the value of its assets, which could force the bank into insolvency (having liabilities in excess of assets, meaning that the bank can be forced into liquidation).

Banks make their profits primarily by issuing loans. A loan is a liability for the individual or corporation receiving it, but an asset for a bank, because it provides income to the bank. Loans are typically less liquid than other assets, because they cannot be turned into cash until the loan matures. Loans also have a higher probability of default than other assets. Because of the lack of liquidity and higher default risk, the bank earns its highest return on loans. The largest categories of loans for commercial banks are commercial and industrial loans made to businesses. Commercial banks also make consumer loans and lend to each other. To maximize its profits, a bank must simultaneously seek the highest returns possible on loans and securities, reduce risk, and make adequate provisions for liquidity by holding liquid assets. (Mishkin, (2004))

Although net income gives us an idea of how well a bank is doing, it suffers from one major drawback: It does not adjust for the bank's size, thus making it hard to compare how well one

bank is doing relative to another. A basic measure of bank profitability that corrects for the size of the bank is the return on assets (*ROA*)which divides the net income of the bank by the amount of its assets. *ROA* is a useful measure of how well a bank manager is doing on the job because it indicates how well a bank's assets are being used to generate profits. Although *ROA* provides useful information about bank profitability, it is not what the bank's owners (equity holders) care about most. They are more concerned about how much the bank is earning on their equity investment, an amount that is measured by the return on equity (*ROE*), the net income per equity capital.

Another commonly watched measure of bank performance is called the *net interest margin* (*NIM*), the difference between interest income and interest expenses as apercentage of total assets. If a bank manager has done a good job of asset and liability management such that the bank earns substantial income on its assets and has low costs on its liabilities, If the bank is able to raise funds with liabilities that have low interest costs and is able to acquire assets with high interest income, the net interest margin will be high, and the bank is likely to be highly profitable. If the interest cost of its liabilities rises relative to the interest earned on its assets, the net interest margin will fall, and bank profitability will suffer. (Mishkin, (2004))

2.2 Determinants of bank profitability

Capital Adequacy

It is measuring by the ratio of equity capital to total risk weighted assets. It is sometimes mention as Capital structure by great deal of literatures. Bank equity capital can see in two dimensions as stated by Aburime (2008). Those are the amount contributed by the owners of a bank (paid-up share capital) that gives them the right to enjoy all the future earnings and the amount of owners' funds available to support a bank's business which includes reserves, and is also termed as total share holders' funds. Bank's capital is widely used as one of the determinants of bank profitability since it indicates the financial strength of the bank (Athanasoglou*et al.*, 2005: p.14).

Aburime (2008) suggested that the bank level of safety achieved through the high capital requirements which generated positive net benefits. The degree of security exceeded the level maximizing net benefits. Capital adequacy requirements generally aim to increase the stability of a

national banking system by decreasing the likelihood of a bank failure and a number of negative externalities exist in banking that cause risk to systematically under price. Studies dealing about the capital adequacy are stated and concluded as follows. Athanasoglou et al. (2005) study on the effects of bank specific, industry specific and macroeconomic determinants of profitability on Greek bank from the period 1985-2001, based on the empirical frame work that incorporates the traditional structure – conduct – performance (SCP) hypothesis. Applying General Movement Method (GMM) used a panel data, the investigation demonstrated that the existence of Positive correlation between returns and capital. Another research conducted by Flamini et al. (2009) on the determinants of commercial banks profitability in Sub – Saharan Africa by taking 389 sample banks in 41 SSA countries, they measuring profitability by return on asset indicators. They founded that capital adequacy has positive and significant effect on profitability. Other researcher Berger (1995) found that capital adequacy ratio affected ROA of USA banks positively in 1983-1989 and negatively in 1989-1992. Based on these results, Berger argued that the relationship between capital adequacy ratio and profitability depending on the specific circumstances of the time period observed. According to the results of the study, a high capital adequacy ratio positively affects profitability when financial situation of banks is perceived as risky and it negatively affects profitability in normal situations due to alternative cost of capital. The main problem in benefiting from this result is the difficulty of determining an optimal level for the capital adequacy ratio.

Similar studies conducted on developing countries found and concluded that, capital adequacy is significant company level determinants of profitability. According to Naceur and Goaied (2001) investigation the impact of bank- specific, industry- specific and macroeconomic determinants of banks' net interest margins and return on asset in the Tunisian banking industry for the 1980-2000 period. The result shows that high net interest margin and return on asset (profitability) tend to be associated with banks that hold a relatively high amount of capital. As determined by Aburime (2008) company level determinants of bank profitability evidence from Nigeria. Using a panel data set consist of 91 observation of 33 banks over the 2000 – 2004 periods. Regression desired outcomes revealed that capital size is one of significant company level determinants of profitability. Though the results indicate that capital size is a significant determinant of bank profitability in Nigeria, only the size of the reserves component of bank capital has a significant relationship with bank profitability. But the shares component of bank capital does not have a significant relationship. In case of Ethiopian commercial banks, the single research conducted by Belayneh (2011) on the

determinants of commercial banks profitability during the period 2001 – 2010 by used Ordinary Least Square (OLS) and balanced panel data of seven Ethiopian commercial banks. The result from estimation shows that, capital can significantly affect commercial banks profitability in Ethiopia. Following this, he concluded that there is positive relationship between banks capital and profitability. And also the higher the capital level brings higher profitability for Ethiopian commercial banks since by having more capital; a bank can easily adhere to regulatory capital standards and the excess capital also can be provided as loans.

Generally, there is the presence of positive relationship between profitability and capital has been supported by Athanasoglou*et al.* (2005); Flamini et al. (2009); Naceur and Goaied (2001) and Belayneh (2011). Therefore, researchers widely posit that the more capital a bank has, the more resistant it will be to failure.

Expense Management

It is measured by the ratio of operating expense to total assets (e.gAburime, 2008) and it is a proxy to management quality. Clearly, efficient cost management is a prerequisite for improved profitability of banks. There is evidence that superior management raise profits and market shares (Berger, 1995 and Athanasoglou*et al*.2005). According to Athanasoglou et al. (2005) investigation on Greek banks during the period 1985 – 2001 observed that Operating expenses appear to be an important determinant of profitability. There is direct negative connection between Operating expenses and profitability of banks; means that there is immediate negative relation between lack of efficiency in expenses management and profitability of banks. In other words there is direct positive relation between efficient expense management (i.e management quality) and profitability. Since banks pass part of increased cost to customers and the remaining part to profits. In a study of United States banks for the period 1989–93, Angbazo (1997) finds that there is evidence that net interest margins are positively related management quality.

Guru et al. (2002) attempt to identify the determinants of successful deposit banks in Malaysia. The findings of this study revealed that efficient expenses management was one of the most significant in explaining high bank profitability. On the other hand, Montinola and Moreno (2001: 6) as cited by Aburime, (2008) argue that about effective cost management or quality of management as follows: *Where management quality is low and managerial monitoring is imperfect, some workers will not*

exert full effort, thereby "free riding" on good workers. Observing that a poor worker next to him is shirking, a good worker may reduce his own effort; so over time average effort falls to that of the poorest worker. From time to time, good workers may be hired, but their effort will eventually drop down to the preexisting level. At other times, workers who are lazier than existing employees may hire, dragging down the performance of current workers. Since only hires that cause workers to shirk more have an impact, the equilibrium is for efficiency to fall over time and the profitability of the firm is adversely affected. The total cost of a bank (net of interest payments) can separated into operating cost and other expenses (including taxes, depreciation etc.). From various literatures, only operating expenses can viewed as the outcome of bank management. The ratio of these expenses to total assets expected to negatively, relate to profitability, since improved management of these expenses will increase efficiency and therefore raise profits. The operating expenses to operating income ratio shows the overheads or costs of running the bank, including staff salaries and benefits, occupancy expenses and other expenses such as office supplies, as percentage of income. It 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 Guru et al. (2002).

Bank Size

Studies conducted on determinants of bank profitability took bank size variable, as considered to an important determinants of bank performance Kosmidou (2008). If the relative size of a firm expands its market power and profits increases, this is the Market-Power (MP) hypothesis. The hypothesis also referred to as the Structure-Conduct-Performance (SCP) hypothesis (Athanasoglou*et al*., 2005).

One of the most important questions underlying bank policy is which size optimizes bank profitability? Because there is no clear cut points which indicates the relation of appropriate bank size and its profitability? The effect of a growing size on profitability has proved positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucratic and other reasons Athanasoglou*et al.* (2005).

The different studies regarding bank size concluded mixed empirical results. Some studies found economies of scale for large banks (e.g. Athanasoglou, 2006 South Eastern European banks and Kosmidou, 2008 on Greece banks,) and others concluded that discectomies scale for large banks due

to possible bureaucratic bottlenecks and managerial inefficiencies or economics of scale for small banks (e.g. Athanasoglou*et al.*, 2005 on Greece banks, Aburime, 2008 on Nigeria banks and Ngo, 2006 Australian bank). As extensive researchers pointed out the expected sign of bank size is ambiguous. Hence, the size-profitability relationship may expect to be non-linear. The researcher use the natural logarithm of total assets as a proxy for bank size, while the square of the natural logarithm of total assets is included to capture any non-linearity's in the size-profit relationship.

According to Belayneh (2011) research conducted on the determinants of commercial banks profitability during the period 2001 – 2010 concluded that the size of all Ethiopian commercial banks which is measured by log of total asset is increased for the last 10 years. In case of Ethiopian commercial banks, as the result implies that larger banks enjoy the higher profit than smaller banks in Ethiopia banking sector because they are exploiting the benefit of economies of scale.

In the literature, asset and/or deposit base of banks have adopted as proxy for their size. At times, their market shares of assets and/or deposit have also used. The second set of measures, however, follows from the first. According Aburime (2008) investigation on Nigeria banking industry on the area of bank performance and supervision by adopted the data envelopment analysis approach founded that, the profitability of the bigger banks is significantly higher than that of the smaller banks.

Non-Interest Income

Non-interest income is other alternative means of income other than earning from loans. It includes fees earned from offering unit trust services, service charge on deposit account, standard fees, and charges for other bank services. With increasing globalization and financial liberalization, the bank business has been undergoing a gradual transformation away from the traditional business of financial intermediation and towards provision of other financial services including mutual fund, insurance etc. Thus, non-interest income would represent a key source of bank revenue at present and in the future Rasiah (2010). By more aggressively selling services other than loans such as brokerage, insurance and trust services, bankers have found a promising channel for boosting the income statement by diversifying their income sources, and for insulating their banks more adequately from fluctuations in interest rates and loan default risk. Furthermore, higher diversification regarding

banks' income sources towards derivative instruments and other fee-based activities shows a positive effect on banks profitability on the Korean banking sector Sufian (2011).

2.3 Empirical Literatures

Some studies were country specific and few of them considered panel of countries reviewing the determinants of profitability. The main conclusion emerging from these studies is that internal factors explain a large proportion of banks profitability; nevertheless external factors have also had an impact on their performance.

Dr.SrinivasMadishetti et al. (2013) analyzed the profitability determinants of Tanzania commercial banks for the period of 2006-2012. Internal determinants use the variables like liquidity risk, credit risk, operating efficiency, business assets and capital adequacy and external determinants use the variables GDP growth rate and inflation rate. The study found that internal variables determine the bank's profitability whereas external factors do not influence the profitability of commercial banks.

Abuzar (2013) studied the determinants of profitability of Islamic banks operating in Sudan. This study found that only the internal factors have the substantial impact on the profitability of the commercial banks. Cost, liquidity and the size of the banks have the positive relationship with the bank profitability. Macroeconomic or external factors have no substantial impact on profitability.

Eljelly(2013) aimed to explore the determinants of profitability of Islamic banks in Sudan, one of the few countries that have total Islamic economic and banking systems. Using a sample of Sudanese banks, the paper found that only the internal factors to these banks have a significant impact on banks' profitability, as measured by return on assets (ROA), return on equity (ROE), and net financing margin (MARG). More specifically, cost, liquidity and size of the bank are found to have positive and significant effects on profitability. However, external macroeconomic factors are classified as redundant and have no significant effects on profitability.

Ani,W.U et.al (2012) investigated the determinants of profitability of commercial banks in Nigeria for the period of ten years from 2001 to 2010 including the observation of 147 banks.

Pooled ordinary least square was used to estimate the coefficient. Study finds that bank size does not increase the profit of any commercial banks in Nigeria. Greater capital-asset ratio increases the profitability of banks.

ImadZ.Ramadan et.al (2011) took apart the determinants of profitability of 10 Jordan banks for the period of 2001-2010.They have used return on equity (ROE) and return on assets (ROA) as dependent variables and internal and external factors have been used as an independent variables and the type of data of Jordan banks is panel data. Results designated that profitability of the Jordan banks depend upon the well capitalized banks, high loaning activities, less credit risk and cost management efficiency. Findings also expressed that size does not increase the profitability of Jordan banks.

SairaJavaid et.al (2011) examined the profitability of top 10 the commercial banks of Pakistan for the period of 2004-2008. Pooled ordinary least square has been used to check the impact of internal factors includes assets, loan, equity and deposits on the profitability of banks on dependent variable called return on asset (ROA).The study found that internal factors stated above effect the bank's profitability. Bank size or total assets does not lead any profitability of commercial banks but equity and deposits have a significant influence on the profitability of commercial banks.

Imad et al. (2011) studied a balanced panel dataset of Jordanian banks for the purpose of investigating the nature of the relationship between the profitability of banks and the characteristics of internal and external factors for 10 banks over the period 2001 to 2010. Using two measures of bank's profitability: the rate of return on assets (ROA) and the rate of return on equity (ROE), the results show that the Jordanian bank's characteristics with banks with high amount of capital and large overheads. Further the paper also noted that other determinants such as loans has positive and bank size has negative impact on profitability.

In another dimension, Gull et al. (2011) examined the relationship between bank-specific and macro-economic characteristics over bank profitability by using data of top fifteen Pakistani commercial banks over the period 2005 to 2009. The paper used the pooled ordinary least square method to investigate the impact of assets, loans, equity, deposits, economic growth, inflation

and market capitalization on major profitability indicators that is, return on asset (ROA), return on equity (ROE), return on capital employed (ROCE) and net interest margin (NIM) separately. The empirical results showed strong evidence that both internal and external factors have a strong influence on the profitability.

Paolo Saona Hoffmann (2011) tried out the determinants of profitability of the banks operating in US for the period of 1995-2007. The study undertakes the internal and external factors affecting the profitability of banks in US economy. The study found that there is a negative relationship between the capital ratio and profitability which affirms believe that banks are working most carefully and dismissing potentially profitable trading chances. The cost advantages due to the bank size do not impact on the profitability of the banking industry of US.

DegerAlper (2011) probed the internal and external factors of banks profitability of Turkey for the period of 2002-2010. In this study the return on assets (ROA) and return on equity (ROE) both are the dependent variables and the function of internal and external factors. Profitability increases when the non interest income and asset size increases. And real interest rate in the external factors has positive effect on profitability.

Alpera and Anbar (2011) analyzed the internal and external factors of the commercial banks of Turkey for the period of 2002-2010. The study shows that non-interest income and bank size have the positive impact on the bank profitability. And on the side of the macroeconomic or external factors only the real interest rates impact on the profitability of the commercial banks positively.

Javaid et al. (2011) study aimed to give the analysis of the determinants of top 10 banks' profitability in Pakistan over the period 2004-2008. The focus is on the internal factors only. This paper uses the pooled Ordinary Least Square (POLS) method to investigate the impact of assets, loans, equity, and deposits on one of the major profitability indicator return on asset (ROA). The empirical results have found strong evidence that these variables have a strong influence on the profitability. However, the results show that higher total assets may not necessarily lead to higher profits due to diseconomies of scales. Also, higher loans contribute

towards profitability but their impact is not significant. Equity and Deposits have significant impact on profitability.

Ramadan et al. (2011) studied a balanced panel data set of Jordanian banks was used for the purpose of investigating the nature of the relationship between the profitability of banks and the characteristics of internal and external factors. For this purpose 100 observation of 10 banks over the period 2001-2010 were comprised. Two measures of bank's profitability have been utilized: the rate of return on assets (ROA) and the rate of return on equity (ROE). Results showed that the Jordanian bank's characteristics explain a significant part of the variation in bank profitability. High Jordanian bank profitability tends to be associated with well-capitalized banks, high lending activities, low credit risk, and the efficiency of cost management. Results also showed that the estimated effect of size did not support the significant scale economies for Jordanian banks.

Scott and Arias (2011) developed an econometric model whereby the primary determinants of profitability of the top five bank holding companies in the United States could be examined and understood. The econometric model was based on internal aspects of the banking organizations as they relate to their return on assets and external aspects of the environment in which they compete as measured by growth in GDP was developed based on guidance provided by economists and industry experts to determine the impact of the external national economy of these five leading banks according to their size as measured by total assets. The results show that profitability determinants for the banking industry include positive relationship between the return on equity and capital to asset ratio as well as the annual percentage changes in the external per capita income.

FadzlanSufian et.al (2008) studied the profitability of the banks in Philippines for the period of 1990-2005. The study suggests that if the expense related behavior and credit risk increases the profitability of the banks operating in Philippines decreases and the non-interest income and capitalization both have the positive relationship with bank's profitability. During the study undertaken the inflation increases the profit of the banks in Philippines decreases.

Havrylchyk et al.(2006) found a positive and direct relationship between capital and profits of banks. It implies that a more efficient bank should have higher profits since it is able to maximize on its net interest income.

Vong and chan (2006) analyzed the impact of internal and external factors on the profitability of Macao banking industry for the period of 15 years. This study found that high capitalization leads to the high profitability and size of the bank increases the. And on the other hand, loan loss provision impact on the profitability of the Macao banking industry unfavorably.

Goddard et al. (2004) had investigated the profitability of European banks during the 1990s using cross-sectional, pooled cross-sectional time series and dynamic panel models. Models for the determinants of profitability incorporate size, diversification, risk and ownership type, as well as dynamic effects. They found that despite intensifying competition there was significant persistence of abnormal profit from year to year.

Haron (2004) finds that internal factors such as liquidity, total expenditures, funds invested in Islamic securities, and the percentage of the profit-sharing ratio between the bank and the borrower of funds are highly correlated with the level of total income received by the Islamic banks. Similar effects are found for external factors such as interest rates, market share and size of the bank. Other determinants such as funds deposited into current accounts, total capital and reserves, the percentage of profit-sharing between bank and depositors, and money supply also play a major role in influencing the profitability of Islamic banks.

Bashir (2003) paper analyzed how bank characteristics and the overall financial environment affect the performance of Islamic banks. Utilizing bank level data, the study examines the performance indicators of Islamic banks across eight Middle Eastern countries between 1993 and 1998. A variety of internal and external banking characteristics were used to predict profitability and efficiency. Controlling for macroeconomic environment, financial market structure, and taxation, the results indicate that high capital-to-asset and loan-to-asset ratios lead to higher profitability. The results also indicate that foreign-owned banks are likely to be profitable. Everything remaining equal, the regression results show that implicit and explicit taxes affect the

bank performance and profitability negatively while favorable macroeconomic conditions impact performance measures positively.

Guru et al. (2002) attempt to identify the determinants of successful deposit banks in order to provide practical guides for improved profitability performance of these institutions. The study is based on a sample of seventeen Malaysian commercial banks over the 1986-1995 period. The profitability determinants were divided in two main categories, namely the internal determinants (liquidity, capital adequacy and expenses management) and the external determinants (ownership, firm size and external economic conditions). The findings of this study revealed that efficient expenses management was one of the most significant in explaining high bank profitability. Among the macro indicators, high interest ratio was associated with low bank profitability and inflation was found to have a positive effect on bank performance.

Abreu and Mendes (2002) investigate the determinants of bank's interest margins and profitability for some European countries in the last decade. They report that well capitalized banks face lower expected bankruptcy costs and this advantage "translate" into better profitability. Although with a negative sign in all regressions, the unemployment rate is relevant in explaining bank profitability. The inflation rate is also relevant.

Naceur and Goaied (2001) investigated the impact of banks' characteristics, financial structure and macroeconomic indicators on banks' net interest margins and profitability in the Tunisian banking industry from 1980 to 2000. Individual bank characteristics explain a substantial part of the within-country variation in bank interest margins and net profitability. High net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. Size is found to impact negatively on profitability which implies that Tunisian banks are operating above their optimum level.

Demerguç-Kunt and Huizingha (2001) present evidence on the impact of financial development and structure on bank profitability using bank level data for a large number of developed and developing countries over the 1990-1997 period. The paper finds that financial development has a very important impact on bank performance. Specifically, the paper reports that higher bank development is related to lower bank performance (Tougher competition explains the decrease of

profitability). Stock market development on the other hand, leads to increased profits and margins for banks especially at lower levels of financial development, indicating complementarities between bank and stock market.

Naceur and Goaied (2001) investigate the determinants of the Tunisian bank's performances during the period 1980-1995. They indicates that the best performing banks are those who have struggled to improve labour and capital productivity, those who have maintained a high level of deposit accounts relative to their assets and finally, those who have been able to reinforce their equity.

Bashir (2000) examines the determinants of Islamic bank's performance across eight Middle Eastern countries for 1993-1998 period. A number of internal and external factor were used to predict profitability and efficiencies. Controlling for macroeconomic environment, financial market situation and taxation, the results show that higher leverage and large loans to asset ratios, lead to higher profitability. The paper also reports that foreign-owned banks are more profitable than the domestic one. There is also evidence that taxation impacts negatively bank profitability. Finally, macroeconomic setting and stock market development have a positive impact on profitability.

Study by Demerguç-Kunt and Huizingha (1999) examine the determinants of bank interest margins and profitability using a bank level data for 80 countries in the 1988-1995 period. They report that a larger ratio of bank assets to GDP and a lower market concentration ratio lead to lower margins and profits. Foreign banks have higher margins and profits than domestic banks on developing countries, while the opposite prevail in developed countries.

Molyneux and Forbes (1995) explain market structure and performance in 18 European countries for the four years period 1986-89, using pooled data. Their finding includes that anti-trust or regulatory policy should be designed at changing market structure in order to increase competition or the quality of bank performance. Increasing concentration in banking markets should not be restricted by antitrust or regulatory measures.

According to the study by Susan(2014) bank size which is measured by natural log of total assets has positive significant effect on profit of Kenyan top six commercial banks. According to study by Sehrish et al(2011) bank size have significant positive relation with ROA, where total assets indicate the size of the bank. This positive relationship shows that the size of the bank have significant positive impact on profitability. Goddard et al. (2004) examined that the evidence for any consistent or systematic size–profitability relationship is relatively weak. But according to Ani et al(2012) the size has a significant negative relationship with profitability. This significant negative relationship shows that the size of a bank could significantly affect the profitability of the bank negatively. The major outcome of this study is that higher total assets may not necessarily lead to higher profits. The negative coefficient of size indicates that this relation might be negative due to diseconomies of scale suffered by banks due to uncontrollable increased size. A study by Boyd and Runkle (1993) and Sairaet al., (2011) found a negative relationship between size and bank performance. Sinkey(1992) results indicate that size affects negatively for big firms and positively for smaller banks. Study by Staikouras and Wood (2003) concludes that medium banks earn the highest profits followed by smaller ones. Positive association between size and bank performance are also confirmed by the study done by Flamini et al.,(2009); Bikker& HU (2002). Large banks operate at lower costs because of economies of scale and can raise capital at lower costs. Findings of Molyneux and Thornton (1992) and Bikker and Hu (2002) and SehrishGul et al(2011) shows size of banks have significant positive relation with bank profitability suggesting that larger banks achieve a higher profit. But According to findings of Berger et al.(1987), Boyd and Runkle (1993), Bourke (1989), Naceur(2003) and Javaid et al. (2011) and Ani et al., 2012 higher total assets may not necessarily lead to higher profits due to diseconomies of scale suffered by banks due to uncontrollable increased size.

According to the study by Susan (2014), capital strength impacts positively on Kenyan top banks` profitability in the period 2008-2013. Among the explanatory variables in the study, capital was found to have the largest impact on the changes in profits. The results are similar to Obamuyi (2013) and Bourke (1989) who argue that the positive relationship between bank profitability and size of capital is due to the fact that well capitalized banks access funds cheaply and can invest in better quality assets. The results suggest that the commercial banks can improve their profits if they are well capitalized. Banks with large capital are able to diversify

their investments and are able to stand strong even during general financial crisis in the country. Such banks are strong in attracting more funds at cheaper rates which enhance their liquidity position (Obamuyi, \

2013). the final impact is that such banks will have more funds to give out in form of credit at lower lending rates of interest. According to Ani et al (2012) Capital adequacy (ratio of total equity total asset) shows a positive correlation with profitability (ROA). In the presence of asymmetric information and bankruptcy costs, the way the assets are funded could affect the banks value. A well-capitalized bank may send a good signal to the market regarding its performance (Imad et al., 2011). Our result is in consonance with the findings of (Goddard et al., 2004) that investigated profitability of European banks profitability. According to the study by Goddard et al. (2004) the relationship between the capital–assets ratio and profitability is positive.

According to the study by Susan (2014) increases in bank operation expenses reduce bank profitability of the top Kenyan banks in the period 2008-2013. Molyneux and Thornton (1992) and Naceur (2003) found that bank operation expenses are positively associated with high profits. The results for this paper, implies that poor expenses management explains the poor performance of commercial banks in Kenya. Negative relationship has been supported by various studies like Bourke (1989), Jiang et al (2003), Obamuyi (2013), suggesting that profitable banks operate at lower costs. However, this variable gives mixed results as shown by other studies. Molyneux and Thornton (1992) found that expenses impact positively on profits. The positive association between profitability and expenses was also observed in a study done in Tunisia (Naceur, 2003), and in Malaysia (Guru et al., 2002).

According to Ani et al (2012) an asset composition (ratio of total loans and advances to total asset) shows a positive and significant relationship with profitability. The study assuming other variables remains constant concludes the higher the rate of transforming deposits into loans, the higher the profitability of the bank. In addition to these studies, Sehrish et al(2011) study concludes loan shows positive and significant relationship with ROA. The study by Abreu and Mendes (2000), SehrishGul et al(2011) and Athanasoglou et al. (2006) gives evidence of a positive association between loan ratio and bank profitability. But studies by Bashir and Hassan

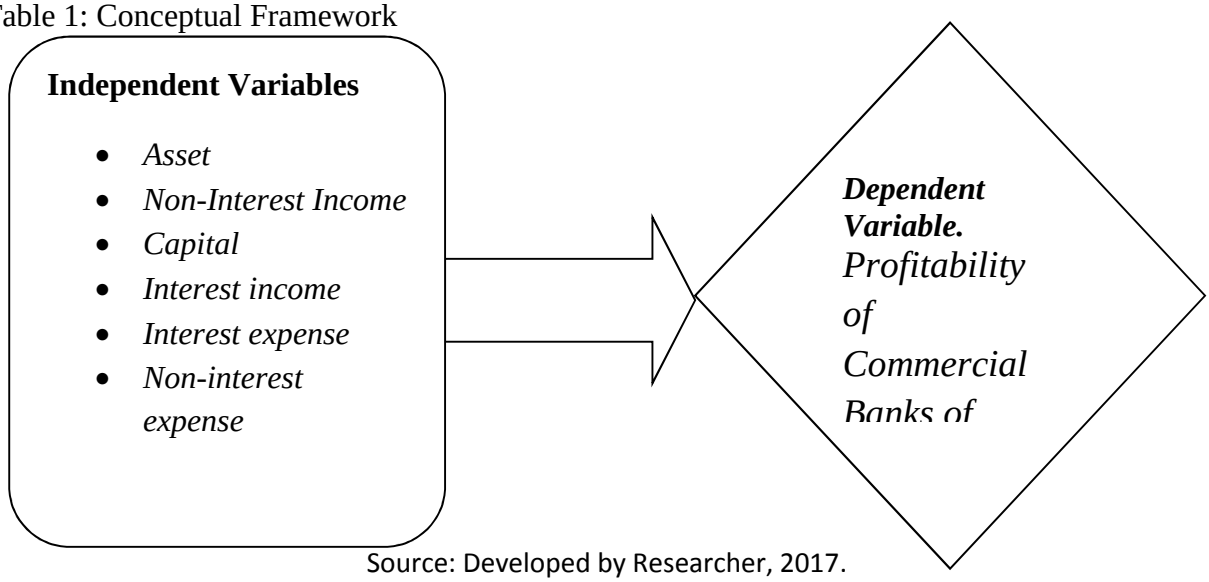
(2003) and Staikouras and Wood (2003) contradict the above results by arguing that higher loans impact negatively on bank profits.

Study by Sehrish et al (2011) shows deposits to total assets has the positive and significant impact on the profitability of the banks. It shows that deposits have positive impact on profitability and banks depending on deposits for funds can achieve better return on assets. Different studies show that bank performance can also be determined by the amount of deposits. According to results by Alkassim (2005) and Ani et al., 2012 deposits have the positive and significant impact on the profitability of the bank. It shows that banks depending on deposits for funds can achieve better return on assets. Kunt and Huizinga (1999) found that deposits affect bank profits negatively due to large costs incurred in their management.

2.4 Conceptual Framework

According to different empirical evidences, different factors determine profitability of commercial banks. Based on different literatures this study expects as following variables will affect profitability of commercial banks of Ethiopia. These variables may include size of the banks, capital, loan, deposit, non-interest income, non-interest expense and interest income. The study will be how these variables determine the profitability of commercial banks in case of some selected banks of Ethiopia using data period from 2000 to 2014.

Table 1: Conceptual Framework



Source: Developed by Researcher, 2017.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The study was used quantitative research method the researcher tries to explain the relation between profitability of commercial banks and its' determinants based on the result that found by regression. Because of this, the research design was explanatory type.

3.2 Samples, Sample Size and Sampling Procedure

From the total population of seventeen commercial banks in Ethiopia both public and private(i.e Commercial bank of Ethiopia, Abay, Abyssinia, Addis, Awash, Berhan, Bunna, CBO,Debub, Dashen, Enat, Lion, NIB, OIB, United, Wegagen, and Zemen) those are engaged from the commercial banking activities, the sample of seven commercial banks (i.e Commercial bank of ethiopia, Awash, Dashen, Abyssinia, Wegagen, United and NIB) was selected based on purposive sampling, because the sample including the banks which is established more than a 15 years ago. Construction and business bank is not included in the study sample because of merged with commercial bank of Ethiopia. The study was covered for the sample period of fifteen years from 2000 to 2014.The study did not include most recent sample period because of unavailability of data for Commercial Bank of Ethiopia.

The sample size represents 41.18% of all registered commercial banks in Ethiopia. The ten banks omitted from the sample had missing financial data for most year of the study. This is because they were established in later years of the sample period, hence omitted from the sample size. The sampling frame list of the commercial bank of Ethiopia was taken from National Bank of Ethiopia (NBE). Since the numbers of the commercial banks which including under sample size are enough to represent the industry in general, the study taken all commercial banks which is fully operated at least more than fifteen years.

Table 1 Commercial Banks in Ethiopia

No.	Bank	Est.	Years of operation
1	Commercial Bank of Ethiopia	1963	53
2	Construction and Business Bank S.C	1983	33
3	Awash International Bank S.C	1994	22
4	Bank of Abysinia S.C	1996	20
5	Dashen Bank S.C	1996	20
6	Wegagen Bank S.C	1997	19
7	United Bank S.C	1998	18
8	Nib International Bank S.C	1999	17
9	Cooperative Bank of Ethiopia S.C	2005	11
10	Lion International Bank S.C	2006	10
11	OromiaInternatiobal Bank S.C	2008	8
12	Bunna International Bank S.C	2009	7
13	Zemen Bank S.C	2009	7
14	Abay Bank S.C	2010	6
15	Brihan International Bank S.C	2010	6
16	Addis international Bank S.C	2011	5
17	Debub Global Bank S.C	2012	4
18	Enat Bank S.C	2013	3
	Total Observation		269

Source: NBE, 2017

3.3 Source of Data and Method of Collection

This study used the secondary balanced panel data to analyze determinants of profitability of the banks by using data from 2000 to 2014 for banks which is selected from the sample size and conducted 105 total observations. Data was gathered from secondary source such as financial statements and balance sheets of the banks from National Bank of Ethiopia and websites of the banks. The data was collected about internal factors only. All data used in study were quantitative data.

3.4 Method of Data Analysis

This study used regression method and interpreted with the help of different financial ratio and statistical description including standard deviation, average, minimum, maximum and median (descriptive statistics) and multiple regressions (significant test). To conduct this, the researcher was supported by statistical tools like eviews 9 software. The proposed hypotheses are tested

statistically to arrive at the conclusion and policy implication. In order to calculate the value of the bank-specific determinants the researcher used financial ratio analysis.

3.5Definition of Term and Measurements

Variable definition

Banks are depository financial institutions that accept deposits from individuals and institutions and make loans. Commercial Banks are financial intermediaries that raise funds primarily by issuing deposits then give loan to different customers. They then use these funds to acquire assets such as securities and loans.

I. **Return on Assets (ROA)**

   It is estimated as ratio of net income to total assets. It shows the bank`s ability to utilize the bank resources to generate profits. ROA is a ratio calculated by dividing the net income over total assets. ROA have been used in most of the studies for the measurement the profitability of the banks.

II. **Return on equity (ROE)**

   It is the ratio of net income to total equity (Fraker, 2006). It measures the rate of return on the ownership interest (shareholders' equity) of the common stock owners. It measures a firm's efficiency at generating profits from every unit of shareholders' equity. ROE shows how well a company uses investment funds to generate earnings growth.

III. **Net Interest Margin (NIM)**

   It is the difference between interest income and interest expenses as apercentage of total assets. NIM is defined as the net interest income divided by total assets. NIM is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their assets. NIM is focused on the profit earned on interest activities (Berger, 1995; Barajas et al., 1999 and Naceur and Goaied, 2001).

IV. **Size of bank: Size of the bank shows the economies and diseconomies of scale.**

   It is used to capture the fact that larger banks are better placed than smaller banks in harnessing economies of scale in transactions to the plain effect that they will tend to

enjoy a higher level of profits. The physical capital (bank buildings, computers, and other equipment) owned by the banks are their assets.

V. **Operating income is the income that comes from a bank's ongoing operations.**

Most of a bank's operating income is generated by interest on its assets, particularly loans. Interest income fluctuates with the level of interest rates, and so its percentage of operating income is highest when interest rates are at peak levels. Noninterest income is generated partly by service charges which generate fees or trading profits for the bank.

VI. **Operating expenses are the expenses incurred in conducting the bank's ongoing operations**.

An important component of a bank's operating expenses is the interest payments that it must make on its liabilities, particularly on its deposits. Just as interest income varies with the level of interest rates, so do interest expenses.

VII. **Noninterest expenses include the costs of running a banking business:**

Salaries for tellers and officers, rent on bank buildings, purchases of equipment such as desks and vaults, and servicing costs of equipment such as computers. The final item listed under operating expenses is provisions for loan losses

Variable Measurements

Dependent variable

i. Return on Asset (ROA)

Commonly used ratio to describe bank profitability is return on assets (ROA)**.** It is measured by net income divided by average total asset. It indicates how effectively a bank manages its assets to generate income and income earned on each unit of assets.

Independent Variables

i. Bank size (BS)

It was described by log of banks total assets. The researcher expects positive relationship between bank size and profitability.

ii. Capital Adequacy (CA)

It was measured by a ratio of total capital over total assets. The researcher expects positive relationship between capital adequacy and profitability.

iii. Interest Expense

It was measured by ratio of interest expense to total gross income. The researcher expects negative relationship between interest expense and profitability.

iv. Interest Income (II)

It was measured by ratio of interest income to total gross income. The researcher expects positive relationship between interest income and profitability.

v. Non-interest Expense (NIE)

It was measured by the ratio of operating expense to total gross income and it is a proxy to management quality. The researcher expects negative relationship between non-interest income and profitability.

vi. Non-Interest Income (NII):-

It was measured by non-interest income to total income ratio. Hence can expect that have a positive relationship with Profitability and non-interest income.

CHAPTER FOUR

RESULT AND DISCUTION

This chapter is about analysis of the determinants of profitability of commercial banks in Ethiopia using the annual balanced panel data. The study has a time series segment spanning from the period 2000 up to 2014 and a cross section segment which considered seven commercial Banks such as Commercial Bank of Ethiopia, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank. Prior to conducting the regression analysis, on the study tested the appropriateness of the data based on assumption of OLS diagnostic test.

4.1 Model Specification

The researcher used the multiple linear regression model and ordinary least square (OLS) estimation method. The characteristics of the model and proposed variables are likely not to violate the classical assumptions underlying the OLS model. Modeling is based on panel data techniques. The cross-sectional element is reflected by the different Ethiopian commercial banks and the time-series element is reflected in the period of study (2000-2014). Panel data is favored over pure time-series or cross-sectional data because it can control for individual heterogeneity and there is a less degree of multi-colinearity between variables (Altai, 2005).

The general model to be estimated is the following linear forms which, is adopted from Davydenko, (2010), Athanasoglo*et al.*, (2005) and Berger *et al.*, (2000) prior theoretical model.

$\prod_{it} = \alpha + \Sigma\beta_k X^n_{it} + \varepsilon_{it}$……(1)

Where: Π*it*is the profitability of bank *i* at time *t*, with *i = 1, N; t = 1, T*, α is a constant term, β is coefficients for the respective variables, *Xit* are k explanatory variables, superscript n denote internal determinants of profitability and *εit*is the disturbance with *vi* the unobserved individual bank-specific effect and *uit*the idiosyncratic error or varies over time and entities.

The equation that account for individual explanatory variables which are specified for this particular study is given as follows.

ROAit = α +β1(BS)it + β2(CA)it + β3(IE)it + β4(II)it + β5(NIE)it + β6(NII)it+ εit……..(2)

Where: ROA=return on asset

β1 – β6 is coefficients for the respective explanatory variables

BS=bank size

CA=Capital Adequacy

II=interest income

IE=Interest Expense

NII=non-interest income

NIE=non-interest expense

To examine the determinants of the profitability of Ethiopian commercial banks, the researcher was used the fixed effects or random effects model after test the validity of the assumption of the models by using the Hausman test (Brooks, 2008; p. 500). The study used a panel regression technique to analyze the impact of bank specific determinants on profitability of commercial banks.

Hausman test hypothesis is stated as follows;

Null: Random effect Model is appropriate

Alt: Fixed effect Model is appropriate

Table 2Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	47.608074	6	0.0000

Source: Researcher Computed, 2017

The research cannot accept null hypothesis instead alternative hypothesis accepted because p value is less than 5%. Therefore, appropriate model for the study is Fixed Effect Model.

4.2 Model Assumptions

I. Normality Test

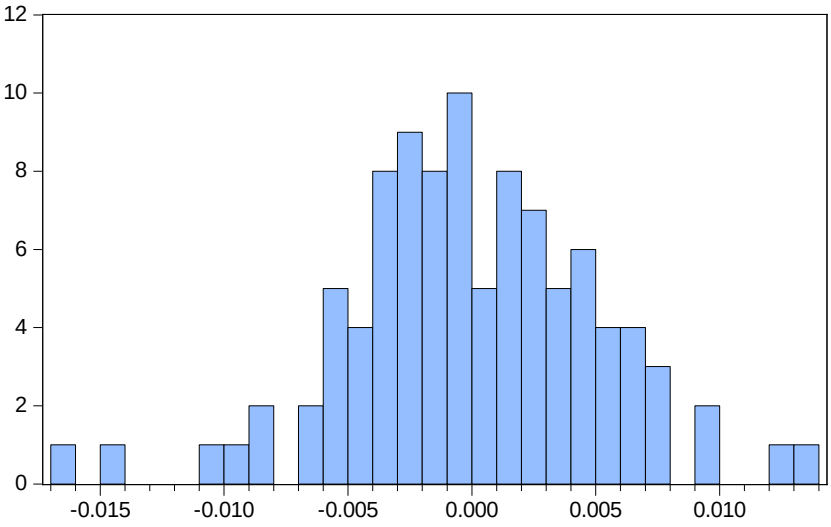
Jarque-Bera uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments - the mean and the variance (Brooks, 2008, p.161). In case of

this study, the researcher used Jarque-Bera normality test to test the null hypothesis of normally distributed errors assumptions.

Null Hypothesis: residuals are normally distributed

Alt: residuals are not normally distributed

Table 3 Normality Test



Series: Standardized Residuals	
Sample 2000 2014	
Observations 98	
Mean	-3.54e-20
Median	-0.000425
Maximum	0.013861
Minimum	-0.016319
Std. Dev.	0.005109
Skewness	-0.148645
Kurtosis	3.909264
Jarque-Bera	3.736833
Probability	0.154368

Source: Researcher Computed, 2017

The correspondent p value of Jarque-Bera is 0.15 which is more than 5%. Therefore, the researcher accepts null hypothesis and reject alternative hypothesis. So, the residuals are normally distributed in this study, concluded that there is no the problem of normality

II. Autocorrelation

It is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are 'autocorrelated' or that they are 'serially correlated'. The most common test of this assumption is by using the Durbin–Watson test and the Breusch-Godfrey test (Boorks, 2008, p. 144).

In order to test the autocorrelation of residuals the researcher used Breusch-Godfrey Serial Correlation LM Test. The study uses Obs*R-squared to test the hypothesis. Hypothesis of the test is as follows;

Null: Residuals are not serially correlated

Alt: Residuals are serially correlated

Table 4: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.182272	Prob. F(2,17)	0.8350
Obs*R-squared	0.503847	Prob. Chi-Square(2)	0.7773

Source: Author Computed, 2017

From the above test Obs*R-squared is 0.77 that the researcher accept null hypothesis and reject alternative hypothesis.

Therefore, there is no serial correlation among residuals.

III. Heteroscedastic Test

This theoretically expressed as by Brooks (2008,p.133) it has been assumed that the variance of the errors is constant, this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic (White (1980) as cited by (Brooks, 2008 p. 134).

To test heteroskedasticity the researcher used Breusch-Pagan-Godfrey method with P value of Obs*R-squared. Hypothesis is tested as follows;

Null: Residuals are not heteroscedastic

Alt: Residuals are heteroscedastic

Table 5: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.047541	Prob. F(4,19)	0.9954
Obs*R-squared	0.237827	Prob. Chi-Square(4)	0.9935
Scaled explained SS	0.287756	Prob. Chi-Square(4)	0.9906

Source: Author Computed, 2017

Since p value of Obs*R-squared is 0.9935, the researcher accepts null hypothesis and rejects alternative hypothesis. Therefore, residuals are not heteroscedastic. Residuals are homoskedastic which is among the requirements of assumptions of the model.

IV. Multicollinearity Test

This helps to identify the correlation between explanatory variables and to avoid double effect of independent variable from the model. A correlation is a single number that describes the degree of relationship between two variables. In other words, multicollinearity describes the relationship among explanatory variables. As indicated on the correlation matrix almost all correlations that have occurred among explanatory variables are weak correlations; this indicates there is no the existence of multicollinearity problem on the study. Cooper and Schindler (2009) and Hailer et al (2006) suggested that multicollinearity problem should be corrected when the correlation extent to be above 0.8 and 0.9 respectively.

4.3 Descriptive Analysis

Conducting descriptive analysis before undertaking regression analysis helps to show much about the relationships between dependent and independent variables. Table 6 below shows the descriptive analysis of the selected banks. The descriptive statistics are presented after checking the normality of the data. The presence of normality (outliers) probably results in biased means and standard deviations when incorporated in the descriptive statistics. They do not only affect the descriptive characteristics but could also deteriorate results from the regression using the OLS technique. Since the tests approved a normal distribution of the data, the possible outliers are not indicated separately.

This analysis includes mean, minimum, maximum and standard deviation. The value of the mean reports the arithmetical average of the variables which are included in the study. The minimum and maximum values indicate the lower and the highest value of the variable. The standard deviation exhibits how much variation or dispersion exists from the mean. A low standard deviation indicates that the data points are inclined to be extremely close to the mean; while high values of standard deviation (SD) indicates that the data set is broaden out over a large range of values.The descriptive analysis that would be carried out in this section mainly depends on summary statistics presented below.

Table 6Descriptive Analysis

	MINIMUM	MAXIMUM	MEAN	STD__DEV_
ROA	-0.00175	0.059506	0.025533	0.010051
AST	5.36598	12.39969	8.534168	1.439493
CAP	0.04201	0.294393	0.120484	0.044706
IE	0.00099	0.033076	0.018226	0.005604
II	0.01948	0.080357	0.049225	0.010561
NIE	0.00872	0.325748	0.031064	0.031404
NII	-0.01976	0.026032	0.000564	0.007294

Source: Researcher Computed, 2017

As stated in the above table, mean of ROA is 0.02 for the commercial banks for the study period undertaken. This is to mean that an average amount of profit obtained from one birr investment is 2 cents. Therefore, 2% of profit is obtained by investment.Minimum value is approximate zero return on asset and 0.06 is the maximum value in the data set. This means, the most profitable bank earns highest profit when it earned 6 cents of net income from one birr investment in asset. This shows 6% of net income for the most profitable bank comes from investment in the study period. The least return on asset of the bank in the study is zero cents from one birr investment. This shows that the least profitable bank in the study period losses approximately zero cents for one birr investment. The data set has the standard deviation of 0.01 which is low and indicates that there is very low variation in the data set and more close to the mean. This is to show that return on asset in the data set has very low variation. Return on asset of the selected banks is almost equal.

Least capital adequacy in the data set is 0.04. This shows the birr amount of least capitalized bank's capital adequacy. Most capitalized bank has capital of 0.29. But the industry average capital adequacy is 0.12. The average CA ratio of the industry is 12.04% but the minimum ratio stated by NBE on directives No. SBB/50/2011 is 8%.

As the study shows, minimum interest expense in the data set is 0.00. In contrast, in the data set highest interest expense is 0.033. On average, banks in the study period pay interest expense of 0.017.

Noninterest income is collected through service charges and commissions from both local and foreign remittances, international trade service facilitation and other services out of loan and advance facilities. Bank that has collected least noninterest income during the study period was -0.01976. Highest noninterest income during the study period was 0.026032. On average during the study period, banks collected noninterest income from different services was 0.000564.

Operation expense is all expenses incurred by the banks except interest expense. Minimum payment for different operation of the banks during study period was 0.01. This shows amount that a bank with lowest operation expense paid in a year. Highest operation expense in the industry during the study period is 0.32. On average banks paid operation expenses of 0.031. The variation between industry average and highest paying bank is 849 million per year during the study period.

4.4 Correlation Analysis

Correlation measures the strength of the linear relationship between two variables. Thus, Pearson‘s correlation is used to identify whether there are relationships between the variables and to describe the strength and the direction of the relationship between two variables (Mohammad, n.d). According to Berndt et. al (2005), the level of association as measured by Pearson‘s co-efficient falls between -1.0 and +1.0, which indicates the strength and direction of association between the two variables. Correlation results between 0 to 1 implies positive relationship, 0 (zero) for no relationship, 1 for perfect positive relationship, -1 for perfect negative relationship and between -1 to 0 indicate the existence of negative relationship.

The correlation analysis was done to analyze the relationship between dependent variable, return on asset, and independent variables, asset, capital, noninterest income, interest expense,interest income and operation expense. To examine the relationship among these variables, Pearson correlation coefficients were calculated. In this section of the study, the analysis and interpretations of the correlation results between dependent and independent variables are presented.

Table 7 Correlation Analysis: Pearson's correlation

Sample (adjusted): 2000 2014

Included observations: 105
Balanced sample

Correlation / Probability	ROA	Asset	Capital	Noninterest income	Interest Expense	Interest Income	Operation Expense
ROA	1.000000						

Asset	0.339176	1.000000					
	0.0006	-----					
Capital	0.281366	-0.498731	1.000000				
	0.0050	0.0000	-----				
Non-interest income	0.124023	-0.050335	-0.151709	1.000000			
	0.02237	0.6226	0.1359	-----			
Interest Expense	-0.171769	-0.279001	0.156040	-0.098320	1.000000		
	0.00908	0.0054	0.1250	0.3355	-----		
Interest Income	0.128805	-0.393578	0.434578	-0.178015	0.654316	1.000000	
	0.02062	0.0001	0.0000	0.0795	0.0000	-----	
Operation Expense	-0.313594	-0.067202	-0.029027	0.015153	0.164219	0.100978	1.000000
	0.0017	0.5109	0.7766	0.8823	0.1061	0.3225	-----

Source: Researcher Computed, 2017

The result of correlation analysis shows that relationship between dependent variable, return on asset, and independent variables such as asset and capital adequacy is positive and significant at 1% significance level. In addition, correlation between return on asset and noninterest income and interest income is positive and significant at 5% significance. But relationship between return on asset and operation expense is negative and significant at 1% significance level. Interest expense has significant negative relationship with return on asset at 5% significance level.

4.5 Regression Analysis

This section presents over all the empirical results of the regressions by using fixed effect model. Table 8 shows the results of the regressions using only significant variables of the study.

Table 8 Regression Analysis

Dependent Variable: ROA
Method: Panel Least Squares
Sample (adjusted): 2000 2014
Periods included: 15
Cross-sections included: 7
Total panel (balanced) observations: 105

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.041157	0.006265	-6.569185	0.0000
BS	0.006037	0.000567	10.65658	0.0000
CA	0.094920	0.019440	4.882788	0.0000
IE	-0.554623	0.149169	-3.718075	0.0004
II	0.318779	0.085453	3.730445	0.0003
NIE	-0.065979	0.018892	-3.492379	0.0008
NII	0.349388	0.080355	4.348037	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.741605	Mean dependent var		0.025533
Adjusted R-squared	0.705126	S.D. dependent var		0.010051
S.E. of regression	0.005458	Akaike info criterion		-7.460526
Sum squared resid	0.002532	Schwarz criterion		-7.117623
Log likelihood	378.5658	Hannan-Quinn criter.		-7.321829
F-statistic	20.32948	Durbin-Watson stat		1.179950
Prob(F-statistic)	0.000000			

Source: Researcher Computed, 2017

The model for the bank's profitability is selected on the basis of Hausman Test. By using Fixed Effect Model, represents the result of regression analysis. The value of R-Squared is 0.74 and adjusted R-Squared is 70% in the model which shows 74% variation in the dependent variable or ROA is described by the independent variables of the model and 26% variation is not explained by the independent variables or internal factors in the study.

Under fixed effect regression table, the value of F- statistic is 20.33 and strongly significant at 1% significance level supporting the validity and stability of the model relevant for the study. Considering the validity of the models particularly the fixed effect regression model the

following sections discussed about regression results of all variables. All variables of the study are significant at 99% confidence level.

Among the study variables, bank size (BS), capital adequacy (CA), interest income (II), and non-interest income (NII) have positive significant effect on profitability of the banking industry. But variables like interest expense (IE) and noninterest expenses (NIE) have negative significant effect on profitability of this industry.

4.6 Discussions

A. Bank Size (BS)

The researcher found bank size has positive and highly significant effect on profitability in terms of asset return at 1% significant level. This positive significant relationship between bank size and profitability suggests that larger banks tend to earn higher profits. This is consistent with prior empirical evidence suggesting that economics scale for large banks due to managerial efficiencies in asset management or diseconomies of scale for smaller banks (e.g. Athanasoglou*et al.,* 2005 on Greece banks, Aburime, 2008 on Nigeria banks and Ngo, 2006 Australian bank). In addition, this study consistent with the Market-Power (MP) hypothesis, which stated relative size of a firm expands its market power and profits increases. And also with other empirical literatures (e.g. Athanasoglou, 2006 South Eastern European banks and Kosmidou, 2008 on Greece banks,) concluded that size is economics of scale for large banks. The finding of this study implies that in Ethiopia banking industry the large size banks (e.g. CBE) are positively affected their profitability by their size. This might, due to the existence managerial efficiencies to manage their assets. In other way the smaller size banks might be disadvantageous by their size to generating more return from their assets.

B. Capital Adequacy (CA)

The coefficient of the capital adequacy (CA) is positive and it is statistically highly significant determinants of profitability of the banks at 1% significance level. This finding is consistent with previous studies with Athanasoglou*et al.* (2005); Flamini et al. (2009); Naceur and Goaied (2001) and Belayneh (2011). According to those researchers 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. This

finding reflects the sound financial condition of Ethiopian commercial banks. Because in addition to the regression result, the descriptive result indicates, the average CA ratio of the industry is 12.04% but the minimum ratio stated by NBE on directives No. SBB/50/2011 is 8%. It's interesting to note that, higher the capital level brings higher profitability for Ethiopian commercial banks since by having more capital; a bank can easily adhere to regulatory capital standards so that excess capital can be provided as loans. This empirical finding strongly related with the responses' of CFO of the banks. Since they strongly agreed CA is the significant determinants of profitability and excess capital can serve as a source of loan.

C. Interest Income (II):

This variable is explained in the model as a ratio of interest income to total income. It is a primary source of income for the banks because banks make loan and receive interest income. According to the study when the interest income is higher, profitability is higher. Havrylchyk et al.(2006) found a positive and direct relationship between interest income and profits of banks. It implies that a more efficient bank should have higher profits since it is able to maximize on its net interest income. As expected interest income has positive effect on profitability of commercial banks. This result is consistent with the study of Havrylchyk et al.(2006). Consist with the above researchers, this study found a positive and highly significant impact of interest income (at 1% significance level) profitability of the banks. This could be attributable to the fact that the banking industry is effectively undergoing business of deposit and lending, financial intermediation and towards provision of other financial services.

D. Interest Expense (IE)

In the case of Ethiopian commercial banks business environment regarding the impact of deposits on profitability research conducted by (Belayeneh, 2011) concluded that, even though, deposit is the main source of funds for banks, the number one expense item for a banking sector is interest payment on saving and fixed deposits. Because of this, the study revealed fixed deposit has a negative and significant impact on Ethiopian commercial banks profitability. In addition to this, the result showed that the impact of saving deposit on banks profitability is unstable and insignificant. Study by Rasiah (2010) showed that interest expense significantly and negatively affects profitability of commercial banks because they have huge saving deposits that cannot be lent.

E. Non-interest Expense (NIE)

The results indicate that expenses management is negative and highly significant determinant of profitability of the bank. This is consistent with prior empirical evidence (e.g. Aburime, 2008; Berger, 1995; Athanasoglou*et al*., 2005 and Guru et al., 2002) suggesting that operating expenses appear to be an important determinant of profitability. Clearly, efficient cost management is a prerequisite for improved profitability of banks. However, their negative effect means that there is a lack of efficiency in expenses management since banks pass part of increased cost to customers and the remaining part to profits. Because of this cost management is the proxy for management quality.

This highly significant and negative coefficient of the cost to income ratio shows the existence of inefficient cost management system. The poor expenses management is one of the main contributors to poor profitability performance of the banks. Operation expense management quality (efficient cost management) is among the main determinants of banks profitability. Management of banks are inefficient in managing the cost.

F. Non-Interest Income (NII)

Financial empirical studies stated that income from fee based activities has positive impact on banks profitability on the ground that by more aggressively selling services other than interest income such as brokerage, insurance and trust services, bankers have found a promising channel for boosting the income statement by diversifying their income sources, and for insulating their banks more adequately from fluctuations in interest rates and loan default risk (e.g. Rasiah, 2010). Furthermore, higher diversification regarding banks' income sources towards derivative instruments and other fee-based activities shows a positive effect on banks profitability on the Korean banking sector Sufian (2011). In addition to this, in the banking industry of Ethiopia as checked by (Belayneh, 2011) there is appositive relation between non-interest income and profitability of the selected banks.

Consist with the above researchers, this study finds a positive and highly significant impact of NII (at 1% significance level) on Ethiopian commercial banks profitability in terms of asset return. This could be attributable to the fact that Ethiopian banking sector is undergoing a gradual transform away from the traditional business of deposit and lending, financial intermediation and towards provision of other financial services including foreign currency exchange, modern money transfer system etc.

Table.9 Summary of hypothesis

The regression analysis from Table 4is used to test the hypothesis.

The study has developed following hypothesis

Table 9: Summary of Hypothesis

Hypothesis	Test
H1: There is significant positive relationship between bank size and profitability of Ethiopian commercial banks.	Accepted
H2: Capital Adequacy has significant positive effects on profitability of commercial banks.	Accepted
H3: There is significant negative relationship between Non-interest Expense and commercial banks profitability in Ethiopia	Accepted
H4: Interest income has significant positive impact on profitability of Ethiopian commercial banks.	Accepted
H5: There is significant positive relationship between Non-interest income and profitability of commercial banks in Ethiopia	Accepted
H6: There is significant negative relationship between interest Expense and commercial banks profitability in Ethiopia	Accepted

Source: Researcher's Computation, 2017.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

Strong and healthy financial system is a prerequisite for sustainable economic growth of a given country. In order to survive negative shocks and maintain a good financial stability, the bank managers and policy maker should identify the key performance determinants of commercial banks. This study specified an empirical framework to investigate the effect of bank management controllable determinants on the profitability of commercial banks of Ethiopia from 2000 to 2014. Over the last 16 years a number of important changes occurred in the Ethiopian commercial banking industry, leading to increased competition and pressure bank profitability. The study also used an appropriate econometric methodology for the estimation of variables coefficient under fixed effect regression models. The following sections discussed about the final conclusion remarks of the study and applicable recommendations.

5.1 Summary of Major Finding

The findings revealed that bank size, capital adequacy, interest expenses, non-interest expense , interest income, and non-interest income are the major significant determinants of the profitability of commercial banks of Ethiopia. According to this study, bank size, capital adequacy, interest income, and non-interest income have significant positive effect on profitability of the banks but non-interest expense and interest expense has significant and negative effect on profitability of commercial banks in Ethiopia.

All the variables are significant at the 1% level in the regression with the predictions. This significance suggests that the bank size, capital adequacy, interest income,, noninterest income interest expense, and non-interest expense are important in jointly determining the profitability of commercial banks.

5.2 Conclusion

As observed from regression results, the explanatory power of the bank-specific determinants on return on assets of the banks is 74%. From this the researcher concludes that profitability is more explained by bank-specific variables than the external variables.

Empirical results show that the coefficients are statistically highly significant at 1% significance level. The fixed effect model is more relevant for this study which is selected by Hausman test. Based on empirical explanation and the coefficient values on current study, the researcher checked that, commercial banks in Ethiopia are able to generate a positive profit in the study periods. It is likely that the banks are able to generate a positive profit during the period.

The coefficient of the capital adequacy (CAD) is positive and it is statistically highly significant determinants of the profitability measure used for the study at 1% significance level. It reflects the sound financial condition of Ethiopian commercial banks. Researcher can conclude that an efficient capital is one of the main determinants of return on asset of the commercial banks of Ethiopia.

Regarding interest income (IIN), it has positive and highly significant (at 1% significance level) effect on asset return (ROA). This implies the existence of efficient loan and advances management, low non-performing loan and feasible projects.

Concerning interest expense (IEX), it has negative and significant effect on the assets return the banks at 1% significance level. This finding implies that the banks are not efficient in saving deposit management. In addition, this implies there is non-loanable interest accruing deposits

Concerning operating expenses management, the results indicate that expenses management is negative and highly significant determinant of profitability of the banks. Since, expenses management is proxy for management quality, this highly significant and negative coefficient of the cost to asset ratio shows the existence of inefficient cost management system (poor quality of management) in the banks. This indicates that, the poor expenses management is one of the main contributors to poor profitability performance of the banks.

The researcher find bank size has positive and statistically high significant (1%)effect on profitability the banks. This positive relationship between bank size and profitability of the banks suggests that larger banks tend to earn higher profits. This indicate, the Ethiopian commercial banking industry is consistent with the Market-Power (MP) hypothesis, which stated relative size of a firm expands its market power and profits increases. From this result the researcher concludes that, in Ethiopia banking industry the large size banks are benefited from their size. Probably, this might be due to the existence of efficient management system for asst.

This study finds a positive and statistically significant impact of noninterest income at 1% significance level on return on asset of the banks. This could be attributable to the fact that Ethiopian banking sector is undergoing a gradually transforming away from the traditional business of deposit and lending, financial intermediation and towards provision of other financial services including foreign currency exchange, modern money transfer system internationally and locally and facilitating international trades which enables to collect service charges and commissions.

Generally, according to the regression result bank size, capital adequacy, interest income and non-interest income have positive significant effects on the banks. However, variables such as interest expense and operation expense have negative significant effect on profitability of the banks.

5.3 Recommendation

The study empirical results provide evidence that, the profitability of commercial banks in Ethiopia is mainly determined by the study variables that are management controllable. So, the bank management should give high concern and set direction to manage properly bank-specific issues of profitability.

The banking industry should focus on the impact of interest income by improving their collection techniques to identifying quality borrowers, gathering sufficient information about the borrowers, improve poor enforcement of creditor rights and obligation, if there is and strengthening the legal

environment of the business. Otherwise it may bring a series collapse against the sector as well as the nation economy.

Commercial banks need to invest on efficient management and in technologies that reduce costs of operations in order to enhance their performance. They should give more attention in reduction of expenses and other duplication of capital costs, to improve the profitability of the banks by reducing operating, administrative and personnel expense through using common facilities such as ATM and technology banking.

Commercial banks should improve and diversify their noninterest income sources such as money transfer, guarantee serves, letter of credit, currency exchange and other service charge and commission collection methods. Because, this source of income is more crucial during loan default risk and interest rate fluctuation occur.

The smaller banks should improve managerial efficiency to increase economic scale of size of the banks.

Recommendation for Further Researcher

In this researching area, the future researcher shall conduct research on by including macroeconomic variables with larger data set.

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Annexes

Annex A. Original Data

Bank	Year	ROA	Asset	Interest Income	Interest Expense	Non-Interest Income	Capital	Operation Expense	Net Income
AIB	2000	0.01976	759.00	50.00	20.00	14.00	94.00	21.00	15.00
AIB	2001	0.01213	907.00	57.00	30.00	19.00	104.00	28.00	11.00
AIB	2002	0.01079	1112.00	61.00	29.00	20.00	131.00	33.00	12.00
AIB	2003	0.00999	1401.00	58.00	26.00	43.00	137.00	57.00	14.00
AIB	2004	0.01469	1770.00	68.00	30.00	56.00	155.00	59.00	26.00
AIB	2005	0.01707	2226.00	94.00	34.00	55.00	228.00	60.00	38.00
AIB	2006	0.0264	2954.00	137.00	48.00	91.00	304.00	69.00	78.00
AIB	2007	0.03734	3830.00	214.50	62.00	129.00	434.00	77.00	143.00
AIB	2008	0.02967	4820.00	251.00	106.00	172.00	597.00	113.00	143.00
AIB	2009	0.02226	6423.00	276.00	120.00	201.00	750.00	155.00	143.00
AIB	2010	0.03121	7945.00	303.00	155.00	383.00	940.00	181.00	248.00
AIB	2011	0.03569	10116.00	394.71	209.47	533.00	1308.00	213.00	361.00
AIB	2012	0.03301	11937.00	668.69	284.94	442.00	1610.00	295.00	394.00
AIB	2013	0.03416	14859.00	890.00	363.00	598.00	2011.00	474.03	507.56
AIB	2014	0.03511	17601.18	1218.16	475.57	703.01	2525.00	617.05	618.00
BOA	2000	0.01671	718.00	40.00	17.00	21.00	123.00	23.00	12.00
BOA	2001	0.02121	896.00	72.00	27.00	17.00	147.00	27.00	19.00
BOA	2002	-0.0018	1142.00	65.00	34.00	15.00	141.00	38.00	-2.00
BOA	2003	0.0045	1333.00	62.00	27.00	19.00	149.00	46.00	6.00
BOA	2004	0.02397	1585.00	97.00	29.00	26.00	193.00	40.00	38.00
BOA	2005	0.02965	2057.00	105.00	33.00	47.00	254.00	37.00	61.00
BOA	2006	0.02999	2834.00	165.00	41.00	55.00	402.00	57.00	85.00
BOA	2007	0.01973	3396.00	202.00	60.00	65.00	403.00	112.00	67.00
BOA	2008	0.00341	4269.94	252.42	93.40	95.02	419.68	232.13	14.58
BOA	2009	0.01834	5476.62	275.89	112.07	128.92	519.23	147.25	100.46
BOA	2010	0.02245	6280.00	262.00	127.00	207.00	585.00	145.30	141.00
BOA	2011	0.02487	7278.00	372.08	163.72	246.00	661.00	196.00	181.00
BOA	2012	0.02621	8240.00	497.49	208.45	226.00	907.00	226.00	216.00
BOA	2013	0.02132	10129.00	497.49	208.45	226.00	1108.00	345.00	216.00
BOA	2014	0.03964	11276.00	734.20	316.11	451.00	1529.00	462.00	447.00
CBE	2000	0.02078	19828.00	1000.00	382.00	320.00	1289.00	318.00	412.00
CBE	2001	0.00088	21489.00	987.00	428.00	354.00	1301.00	7000.00	19.00
CBE	2002	0.02127	22146.00	586.00	395.00	418.00	1353.00	1116.00	471.00

CBE	2003	0.02252	24200.00	670.00	251.00	628.00	1277.00	331.00	545.00
CBE	2004	0.01194	27975.00	680.00	268.00	588.00	1496.00	513.00	334.00
CBE	2005	0.01725	33169.00	646.00	291.00	740.00	2238.00	306.00	572.00
CBE	2006	0.02237	35849.00	853.00	330.00	971.00	1506.00	374.00	802.00
CBE	2007	0.01988	43456.00	1036.00	351.00	1217.00	4220.00	732.00	864.00
CBE	2008	0.027	50416.00	1541.00	534.00	1431.00	4560.00	570.00	1361.00
CBE	2009	0.03233	59411.00	2358.00	614.00	1490.00	5041.00	517.96	1920.71
CBE	2010	0.02653	74187.00	2743.00	744.00	1751.00	5555.00	942.32	1968.33
CBE	2011	0.02506	114265.00	4082.00	1117.00	2913.00	6262.00	1639.00	2862.98
CBE	2012	0.03422	158814.00	6703.00	1676.00	4870.00	7724.00	1966.00	5434.14
CBE	2013	0.03098	197104.00	9539.00	2376.00	4426.00	9045.00	2786.00	6106.91
CBE	2014	0.02754	242726.00	11997.00	4004.00	4073.00	10703.00	4073.00	6684.00
DB	2000	0.01272	865.00	48.00	20.00	19.00	77.00	29.00	11.00
DB	2001	0.01909	1100.00	70.00	31.00	37.00	93.00	40.00	21.00
DB	2002	0.01615	1486.00	77.00	36.00	38.00	122.00	40.00	24.00
DB	2003	0.01356	1991.00	82.00	30.00	52.00	129.00	67.00	27.00
DB	2004	0.02092	2677.00	117.00	41.00	75.00	172.00	73.00	56.00
DB	2005	0.02076	3420.00	162.00	52.00	72.00	243.00	85.00	71.00
DB	2006	0.02926	4546.00	242.00	67.00	125.00	386.00	115.00	133.00
DB	2007	0.03096	6041.00	320.00	6.00	165.00	545.00	134.00	187.00
DB	2008	0.03053	7829.00	420.00	162.00	250.00	731.00	175.00	239.00
DB	2009	0.02567	9733.00	435.00	199.00	321.00	909.00	204.00	249.88
DB	2010	0.02623	12353.38	482.66	248.19	481.67	1123.35	257.89	324.04
DB	2011	0.03074	14659.79	603.68	325.27	678.51	1396.40	327.04	450.66
DB	2012	0.03722	17520.04	897.73	410.23	827.63	1827.89	421.86	652.02
DB	2013	0.03073	19747.17	1020.76	489.88	796.05	2045.70	513.98	606.79
DB	2014	0.03244	21962.20	1140.82	573.16	1004.17	2597.62	614.25	712.48
NIB	2000	0.00633	158.00	3.00	1.00	2.00	40.00	3.00	1.00
NIB	2001	0.03571	336.00	19.00	5.00	13.00	62.00	9.00	12.00
NIB	2002	0.02434	534.00	29.00	10.00	16.00	99.00	13.00	13.00
NIB	2003	0.01469	885.00	37.00	11.00	29.00	125.00	36.00	13.00
NIB	2004	0.02807	1247.00	56.00	15.00	37.00	173.00	29.00	35.00
NIB	2005	0.02656	1732.00	83.00	24.00	52.00	224.00	45.00	46.00
NIB	2006	0.02861	2027.00	107.00	33.00	54.00	285.00	47.00	58.00
NIB	2007	0.02915	2607.00	147.00	42.00	61.00	425.00	60.00	76.00
NIB	2008	0.03096	3650.00	210.00	62.00	107.00	598.00	96.00	113.00
NIB	2009	0.03204	4807.00	254.00	75.00	172.00	729.00	132.00	154.00
NIB	2010	0.03366	5971.00	266.00	90.00	290.00	917.00	182.00	201.00

NIB	2011	0.03459	7112.00	333.00	119.00	324.00	1171.00	193.00	246.00
NIB	2012	0.03456	8276.00	434.00	152.00	326.00	1528.00	218.00	286.00
NIB	2013	0.0327	9145.00	571.00	185.00	281.00	1666.00	275.00	299.00
NIB	2014	0.02763	10747.28	571.00	185.00	281.00	1964.00	276.00	297.00
UN	2000	0.02098	143.00	8.00	2.00	6.00	40.00	7.00	3.00
UN	2001	0.02336	214.00	13.00	4.00	9.00	63.00	10.00	5.00
UN	2002	0.01274	314.00	17.00	6.00	7.00	88.00	11.00	4.00
UN	2003	0.01066	469.00	19.00	6.00	12.00	91.00	18.00	5.00
UN	2004	0.01039	674.00	27.00	11.00	19.00	96.00	25.00	7.00
UN	2005	0.02889	1073.00	46.00	17.00	45.00	125.00	31.00	31.00
UN	2006	0.02752	1599.00	71.00	29.00	55.00	191.00	37.00	44.00
UN	2007	0.02932	2183.00	122.00	40.00	70.00	360.00	65.00	64.00
UN	2008	0.028	3250.00	171.00	63.00	109.00	468.00	91.00	91.00
UN	2009	0.02021	4652.00	210.00	88.00	135.00	520.00	124.00	94.00
UN	2010	0.02951	5896.00	251.00	104.00	260.00	638.00	159.00	174.00
UN	2011	0.03003	7726.00	339.00	145.00	292.00	901.00	163.00	232.00
UN	2012	0.03391	8787.00	519.00	199.00	313.00	1102.00	226.00	298.00
UN	2013	0.02145	9978.00	602.00	247.00	305.00	1201.00	353.00	214.00
UN	2014	0.01685	11765.83	716.23	278.33	325.33	1575.27	400.76	198.27
WB	2000	0.00584	514.00	26.00	14.00	19.00	50.00	24.00	3.00
WB	2001	0.01029	583.00	38.00	17.00	22.00	58.00	29.00	6.00
WB	2002	0.00929	646.00	42.00	20.00	20.00	64.00	30.00	6.00
WB	2003	0.01237	889.00	42.00	17.00	25.00	93.00	35.00	11.00
WB	2004	0.02807	1140.00	66.00	18.00	44.00	129.00	47.00	32.00
WB	2005	0.0297	1616.00	80.00	22.00	70.00	180.00	65.00	48.00
WB	2006	0.03143	2259.00	120.00	35.00	100.00	255.00	91.00	71.00
WB	2007	0.03218	3480.00	185.00	55.00	135.00	403.00	112.00	112.00
WB	2008	0.0337	4125.00	238.00	90.00	192.00	605.00	151.00	139.00
WB	2009	0.03537	5118.00	234.00	83.00	239.00	836.00	133.00	181.00
WB	2010	0.03884	5742.00	247.00	76.00	318.00	1052.00	172.00	223.00
WB	2011	0.04007	8061.00	314.85	100.19	500.00	1337.00	257.00	323.00
WB	2012	0.04025	8347.00	441.66	139.88	408.00	1604.00	252.00	336.00
WB	2013	0.04791	10394.00	585.00	172.00	366.00	1830.00	326.00	498.00
WB	2014	0.05951	11242.58	659.99	230.46	409.00	2144.21	438.00	669.00

Source: NBE, 2017

Annex B: Transformed Data

Bank	Year	ROA	Asset	Interest Income	Interest Expense	Non-Interest Income	Operation Expense	Capital
AIB	2000	0.01976	6.632	0.06588	0.02635	0.01845	0.027668	0.123847
AIB	2001	0.01213	6.81014	0.06284	0.03308	0.02095	0.030871	0.114664
AIB	2002	0.01079	7.01392	0.05486	0.02608	0.01799	0.029676	0.117806
AIB	2003	0.00999	7.24494	0.0414	0.01856	0.03069	0.040685	0.097787
AIB	2004	0.01469	7.47873	0.03842	0.01695	0.03164	0.033333	0.087571
AIB	2005	0.01707	7.70796	0.04223	0.01527	0.02471	0.026954	0.102426
AIB	2006	0.0264	7.99092	0.04638	0.01625	0.03081	0.023358	0.102911
AIB	2007	0.03734	8.25062	0.05601	0.01619	0.03368	0.020104	0.113316
AIB	2008	0.02967	8.48053	0.05207	0.02199	0.03568	0.023444	0.123859
AIB	2009	0.02226	8.76764	0.04297	0.01868	0.03129	0.024132	0.116768
AIB	2010	0.03121	8.9803	0.03814	0.01951	0.04821	0.022782	0.118313
AIB	2011	0.03569	9.22187	0.03902	0.02071	0.05269	0.021056	0.1293
AIB	2012	0.03301	9.3874	0.05602	0.02387	0.03703	0.024713	0.134875
AIB	2013	0.03416	9.60636	0.0599	0.02443	0.04024	0.031902	0.135339
AIB	2014	0.03511	9.77572	0.06921	0.02702	0.03994	0.035057	0.143456
BOA	2000	0.01671	6.57647	0.05571	0.02368	0.02925	0.032033	0.171309
BOA	2001	0.02121	6.79794	0.08036	0.03013	0.01897	0.030134	0.164063
BOA	2002	-0.0018	7.04054	0.05692	0.02977	0.01313	0.033275	0.123468
BOA	2003	0.0045	7.19519	0.04651	0.02026	0.01425	0.034509	0.111778
BOA	2004	0.02397	7.36834	0.0612	0.0183	0.0164	0.025237	0.121767
BOA	2005	0.02965	7.629	0.05105	0.01604	0.02285	0.017987	0.123481
BOA	2006	0.02999	7.94944	0.05822	0.01447	0.01941	0.020113	0.141849
BOA	2007	0.01973	8.13035	0.05948	0.01767	0.01914	0.03298	0.118669
BOA	2008	0.00341	8.35936	0.05912	0.02187	0.02225	0.054364	0.098287
BOA	2009	0.01834	8.60824	0.05038	0.02046	0.02354	0.026887	0.094808
BOA	2010	0.02245	8.74513	0.04172	0.02022	0.03296	0.023137	0.093153
BOA	2011	0.02487	8.89261	0.05112	0.02249	0.0338	0.02693	0.090822
BOA	2012	0.02621	9.01676	0.06037	0.0253	0.02743	0.027427	0.110073
BOA	2013	0.02132	9.22316	0.04912	0.02058	0.02231	0.034061	0.109389
BOA	2014	0.03964	9.33043	0.06511	0.02803	0.04	0.040972	0.135598
CBE	2000	0.02078	9.89485	0.05043	0.01927	0.01614	0.016038	0.065009
CBE	2001	0.00088	9.9753	0.04593	0.01992	0.01647	0.325748	0.060543
CBE	2002	0.02127	10.0054	0.02646	0.01784	0.01887	0.050393	0.061095
CBE	2003	0.02252	10.0941	0.02769	0.01037	0.02595	0.013678	0.052769

CBE	2004	0.01194	10.2391	0.02431	0.00958	0.02102	0.018338	0.053476
CBE	2005	0.01725	10.4094	0.01948	0.00877	0.02231	0.009225	0.067473
CBE	2006	0.02237	10.4871	0.02379	0.00921	0.02709	0.010433	0.04201
CBE	2007	0.01988	10.6795	0.02384	0.00808	0.02801	0.016845	0.09711
CBE	2008	0.027	10.8281	0.03057	0.01059	0.02838	0.011306	0.090447
CBE	2009	0.03233	10.9922	0.03969	0.01033	0.02508	0.008718	0.08485
CBE	2010	0.02653	11.2143	0.03697	0.01003	0.0236	0.012702	0.074878
CBE	2011	0.02506	11.6463	0.03572	0.00978	0.02549	0.014344	0.054802
CBE	2012	0.03422	11.9755	0.04221	0.01055	0.03066	0.012379	0.048636
CBE	2013	0.03098	12.1915	0.0484	0.01205	0.02246	0.014135	0.045889
CBE	2014	0.02754	12.3997	0.04943	0.0165	0.01678	0.01678	0.044095
DB	2000	0.01272	6.76273	0.05549	0.02312	0.02197	0.033526	0.089017
DB	2001	0.01909	7.00307	0.06364	0.02818	0.03364	0.036364	0.084545
DB	2002	0.01615	7.30384	0.05182	0.02423	0.02557	0.026918	0.0821
DB	2003	0.01356	7.59639	0.04119	0.01507	0.02612	0.033651	0.064792
DB	2004	0.02092	7.89245	0.04371	0.01532	0.02802	0.027269	0.064251
DB	2005	0.02076	8.1374	0.04737	0.0152	0.02105	0.024854	0.071053
DB	2006	0.02926	8.422	0.05323	0.01474	0.0275	0.025297	0.08491
DB	2007	0.03096	8.70632	0.05297	0.00099	0.02731	0.022182	0.090217
DB	2008	0.03053	8.96559	0.05365	0.02069	0.03193	0.022353	0.093371
DB	2009	0.02567	9.18328	0.04469	0.02045	0.03298	0.02096	0.093394
DB	2010	0.02623	9.42168	0.03907	0.02009	0.03899	0.020876	0.090935
DB	2011	0.03074	9.59286	0.04118	0.02219	0.04628	0.022308	0.095254
DB	2012	0.03722	9.7711	0.05124	0.02341	0.04724	0.024079	0.104331
DB	2013	0.03073	9.89077	0.05169	0.02481	0.04031	0.026028	0.103595
DB	2014	0.03244	9.99708	0.05194	0.0261	0.04572	0.027968	0.118277
NIB	2000	0.00633	5.0626	0.01899	0.00633	0.01266	0.018987	0.253165
NIB	2001	0.03571	5.81711	0.05655	0.01488	0.03869	0.026786	0.184524
NIB	2002	0.02434	6.2804	0.05431	0.01873	0.02996	0.024345	0.185393
NIB	2003	0.01469	6.78559	0.04181	0.01243	0.03277	0.040678	0.141243
NIB	2004	0.02807	7.1285	0.04491	0.01203	0.02967	0.023256	0.138733
NIB	2005	0.02656	7.45703	0.04792	0.01386	0.03002	0.025982	0.12933
NIB	2006	0.02861	7.61431	0.05279	0.01628	0.02664	0.023187	0.140602
NIB	2007	0.02915	7.86596	0.05639	0.01611	0.0234	0.023015	0.163023
NIB	2008	0.03096	8.20248	0.05753	0.01699	0.02932	0.026301	0.163836
NIB	2009	0.03204	8.47783	0.05284	0.0156	0.03578	0.02746	0.151654
NIB	2010	0.03366	8.69467	0.04455	0.01507	0.04857	0.030481	0.153576
NIB	2011	0.03459	8.86954	0.04682	0.01673	0.04556	0.027137	0.164651

NIB	2012	0.03456	9.02112	0.05244	0.01837	0.03939	0.026341	0.18463
NIB	2013	0.0327	9.12096	0.06244	0.02023	0.03073	0.030071	0.182176
NIB	2014	0.02763	9.28241	0.05313	0.01721	0.02615	0.025681	0.182744
UN	2000	0.02098	4.96284	0.05594	0.01399	0.04196	0.048951	0.27972
UN	2001	0.02336	5.36598	0.06075	0.01869	0.04206	0.046729	0.294393
UN	2002	0.01274	5.74939	0.05414	0.01911	0.02229	0.035032	0.280255
UN	2003	0.01066	6.1506	0.04051	0.01279	0.02559	0.03838	0.19403
UN	2004	0.01039	6.51323	0.04006	0.01632	0.02819	0.037092	0.142433
UN	2005	0.02889	6.97821	0.04287	0.01584	0.04194	0.028891	0.116496
UN	2006	0.02752	7.37713	0.0444	0.01814	0.0344	0.023139	0.11945
UN	2007	0.02932	7.68846	0.05589	0.01832	0.03207	0.029776	0.164911
UN	2008	0.028	8.08641	0.05262	0.01938	0.03354	0.028	0.144
UN	2009	0.02021	8.44505	0.04514	0.01892	0.02902	0.026655	0.11178
UN	2010	0.02951	8.68203	0.04257	0.01764	0.0441	0.026967	0.108209
UN	2011	0.03003	8.95235	0.04388	0.01877	0.03779	0.021098	0.116619
UN	2012	0.03391	9.08103	0.05906	0.02265	0.03562	0.02572	0.125413
UN	2013	0.02145	9.20814	0.06033	0.02475	0.03057	0.035378	0.120365
UN	2014	0.01685	9.37295	0.06087	0.02366	0.02765	0.034061	0.133885
WB	2000	0.00584	6.24222	0.05058	0.02724	0.03696	0.046693	0.097276
WB	2001	0.01029	6.36819	0.06518	0.02916	0.03774	0.049743	0.099485
WB	2002	0.00929	6.4708	0.06502	0.03096	0.03096	0.04644	0.099071
WB	2003	0.01237	6.7901	0.04724	0.01912	0.02812	0.03937	0.104612
WB	2004	0.02807	7.03878	0.05789	0.01579	0.0386	0.041228	0.113158
WB	2005	0.0297	7.38771	0.0495	0.01361	0.04332	0.040223	0.111386
WB	2006	0.03143	7.72268	0.05312	0.01549	0.04427	0.040283	0.112882
WB	2007	0.03218	8.15479	0.05316	0.0158	0.03879	0.032184	0.115805
WB	2008	0.0337	8.32482	0.0577	0.02182	0.04655	0.036606	0.146667
WB	2009	0.03537	8.54052	0.04572	0.01622	0.0467	0.025987	0.163345
WB	2010	0.03884	8.65556	0.04302	0.01324	0.05538	0.029955	0.183211
WB	2011	0.04007	8.99479	0.03906	0.01243	0.06203	0.031882	0.16586
WB	2012	0.04025	9.02966	0.05291	0.01676	0.04888	0.03019	0.192165
WB	2013	0.04791	9.24898	0.05628	0.01655	0.03521	0.031364	0.176063
WB	2014	0.05951	9.32746	0.0587	0.0205	0.03638	0.038959	0.190722

Source: Researcher Computed, 2017

Annex C

Correlation Analysis: Pearson's correlation

Sample (adjusted): 2000 2014

Included observations: 105
Balanced sample

Correlation

Probability	ROA	Asset	Capital	Noninterest income	Interest Expense	Interest Income	Operation Expense
ROA	1.000000						

Asset	0.339176	1.000000					
	0.0006	-----					
Capital	0.281366	-0.498731	1.000000				
	0.0050	0.0000	-----				
Non-interest income	0.124023	-0.050335	-0.151709	1.000000			
	0.02237	0.6226	0.1359	-----			
Interest Expense	-0.171769	-0.279001	0.156040	-0.098320	1.000000		
	0.00908	0.0054	0.1250	0.3355	-----		
Interest Income	0.128805	-0.393578	0.434578	-0.178015	0.654316	1.000000	
	0.02062	0.0001	0.0000	0.0795	0.0000	-----	
Operation Expense	-0.313594	-0.067202	-0.029027	0.015153	0.164219	0.100978	1.000000
	0.0017	0.5109	0.7766	0.8823	0.1061	0.3225	-----

Source: Output from E-views 9, 2017