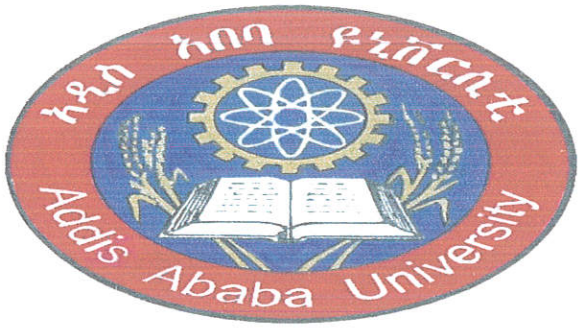

ADDIS ABABA UNIVERSITY
SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION
DEPARTMENT OF ACCOUNTING AND FINANCE

DETERMINANTS OF COMMERCIAL BANKS PROFITABILITY: AN EMPIRICAL STUDY ON ETHIOPIAN COMMERCIAL BANKS

A Project Paper Submitted to the Department of Accounting and Finance of Addis Ababa University on Partial Fulfillment of the Requirement for Master of Science Degree in Accounting and Finance

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June, 2011

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GSR/2344/02

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Name Signature Date

Signed Declaration

I declare that the thesis for the M.Sc. degree at the University of Addis Ababa, hereby submitted by me, is my original work and has not previously been submitted for a degree at this or any other university, and that all reference materials contained therein have been duly acknowledged.

Name: Belayneh Hailegeorgis

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ACKNOWLEDGEMENTS

I take this opportunity to express my sincere gratitude to Ato Gebremedhin Gebrehiwot, Instructor of Department of Accounting and Finance at Addis Ababa University, for his expert guidance, helpful criticism, valuable suggestions and encouragement at every stage during the completion of this work. It was pleasant and inspiring experience for me to work under his guidance.

I also thank all Ethiopian commercial banks finance and corporate planning department staffs, who provided me 10 years financial statements of their company.

It is my pleasure to thank Ato Belete Fola, a staff member of National Bank of Ethiopia (NBE) bank supervision department, who give me the banking sector and macroeconomic data which are very much valuable for this study.

I add a special note of admiration and gratitude to my families and friends, without their moral support, it would have been impossible for me to go through this piece of work.

At last but not least my deep gratitude goes to Haramaya University (H.U) and Addis Ababa University (A.A.U) for sponsoring me throughout my work, and for all those who stood by my side during this work.

ABSTRACT

The aim of this study is to examine the impact of bank-specific, industry-specific and macroeconomic determinants of Ethiopian commercial banks profitability. The study applied the balanced panel data of seven Ethiopian commercial banks that covers the period 2001- 2010. The paper used Ordinary Least Square (OLS) technique to investigate the impact of capital, size, loan, deposits, noninterest income, noninterest expense, credit risk, market concentration, economic growth, inflation and saving interest rate on major profitability indicator i.e., return on asset (ROA). The estimation results show that all bank-specific determinants, with the exception of saving deposit, significantly affect commercial banks profitability in Ethiopia. Market concentration is also a significant determining factor of profitability. Finally, with regard to macroeconomic variables, only economic growth exhibits a significant relationship with banks' profitability. The results of the study are of value to both academics and policy makers.

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Abbreviations

CAP	Capital
CBE	Commercial Bank of Ethiopia
CONS	Market Concentration
CR	Credit Risk
EPH	Expense Preference Hypothesis
ESH	Efficient Structure Hypothesis
FIXD	Fixed Deposit
GDP	Gross Domestic Product
IMF	International Monitory Fund
INF	Inflation Rate
INT	Lending Interest Rate
LOAN	Loans
MoFED	Minister of Finance and Economic Development
NBE	National Bank of Ethiopia
NIE	Non Interest Expense
NII	Non Interest Income
OLS	Ordinary Least Square
RAH	Risk Avoidance Hypothesis
ROA	Return on Asset
ROE	Return on Equity
SAVED	Saving Deposit
SCPH	Structure Conduct Performance Hypothesis
SIZE	Bank Size
SSA	Sub Saharan Africa

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

During the last decades the banking sector all around the world has experienced major transformation in its environment due to improvement in the requirement of financial services and high tech facilities, resulting in significant impacts on its profitability. Both internal and external factors have been affecting the profitability of banks over time. Hence, identification and analysis of the determinants of bank profitability have attracted for many years the interest of academic researchers as well as bank management, supervisors and financial service participants. The study of bank performance becomes even more important in view of the ongoing financial and economic crises, which will have a fundamental impact on the banking industry in many countries around the globe. Therefore, in the next paragraphs we will see continues progress of studies on identification and analysis of the main commercial bank profitability determinants and their level of significance in the past decades.

Earlier, Short (1979) and Bourke (1989) indicated that the determinants of commercial bank Profitability can be divided into two main categories namely the internal determinants which are management controllable and the external determinants which are beyond the control of the management of the institutions. Following early work of Short (1979) and Bourke (1989), a number of more recent studies have attempted to identify some of the major determinants of bank profitability. On the other hand, researches on the determinants of bank profitability were focused on both the returns on bank assets and

equity, and net interest rate margins as a profitability measures. It has traditionally explored the impact on bank performance of bank-specific factors, such as risk, market power, and regulatory costs. More recently, research has focused on the impact of macroeconomic factors on bank performance (IMF, 2002). According to Samy B.Naceur (2003) the previous studies on the determinants of bank's interest margin and profitability have focused on a particular country and/or on a panel of countries.

According to Devinaga Rasiah (2010) internal determinants of commercial banks profitability can be broadly classified into two sub-categories namely financial statement variables and non-financial statements variables. The Financial statement variables are factors relate to the decisions which directly affect the items in a balance sheet and profit & loss accounts. On the other hand, the nonfinancial statement variables involve those factors which do not have a direct impact on the financial statements. The External determinants of commercial bank profitability are also those factors which are external to the commercial banks and hence outside the control of management. There are several specific factors suggested as impacting the profitability of commercial banks which are financial regulation, competitive conditions, concentration, market share, market growth, ownership, economic growth, interest rate and inflation.

When we come to previous studies on sub Saharan African countries, including Ethiopia, Valentina Flamini *et al.*, (2009) have made a study on the determinants of commercial bank profitability in the region by using a sample of 389 banks from 41 Sub-Saharan Africa (SSA) countries. According to Valentina Flamini *et al.*, (2009), bank profitability is high in Sub-Saharan Africa (SSA) compared to other regions. In addition, the study

finds that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Bank returns are affected by macroeconomic variables, suggesting that macroeconomic policies that promote low inflation and stable output growth does boost credit expansion. The results also indicate moderate persistence in profitability. On the other hand there was a study made on determinants of Ethiopian private banks profitability in 2008 but the researcher couldn't access and see the methodology employed by the researcher and final finding of the paper.

1.2 Background of the Study Area

History of Banking in Ethiopia

Modern banking in Ethiopia was introduced in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British owned National Bank of Egypt to open a new bank in Ethiopia. February 15, 1906 marked the beginning of banking in Ethiopia history when the first Bank of Abyssinia was inaugurated by Emperor Menelik II. It was a private bank whose shares were sold in Addis Ababa, New York, Paris, London, and Vienna. In 1931, Emperor Haile Selassie introduced reforms into the banking system and the Bank of Abyssinia was liquidated and became the Bank of Ethiopia, a fully government-owned bank providing central and commercial banking services until the Italian invasion of 1936. During the Italian invasion, Bank of Italy was formed a legal tender in Ethiopia. In 1943, after Ethiopia regains its independence from fascist Italy, the State Bank of Ethiopia was established, with 2 departments performing the separate functions of an issuing bank and a commercial bank. In 1963, these functions

were formally separated and the National Bank of Ethiopia (the central and issuing bank) and the Commercial Bank of Ethiopia are formed. In the period up to 1974, several other financial institutions emerged including the state owned as well as private financial institution. State owned financial institutions includes;

- The Agricultural and Industrial Development Bank (Finance state owned enterprises)
- The Savings and Mortgage Corporation of Ethiopia
- The Imperial Savings and Home Ownership Public Association (Provided savings and loan services)

In addition, private financial institutions of the time include;

- The Addis Ababa Bank
- The Banco di Napoli
- The Banco di Roma

After 1974, the banking business could not move further because of the nationalization of private investments by the socialist regime that came into power leaving only three government banks; the National Bank of Ethiopia, the Commercial Bank of Ethiopia and agricultural and Industrial Development Bank (Mortgage Bank). This was reversed when the socialist regime was overthrown in 1991. Subsequently, the licensing and supervision of Banking Business Proclamation No. 84/1994 was issued in 1994 which led to the beginning of a new era for Ethiopia banking sector. Immediately after the enactment of the proclamation private banking companies began to flourish, leading to 12 private banks and one public owned commercial bank (excluding the two non commercial public

owned banks which are Development Bank and Construction and Business Bank) operating in Ethiopia as of the current year 2011. Both public owned and private commercial banks which are currently operating throughout the country are listed in the next table.

Table 1. List of Public and Private Commercial Banks in Ethiopia

Commercial Banks		**Branches**			
	Est.	**A.A**	**Region**	**Total**	**% share**
Public Bank					
Commercial Bank of Ethiopia	1963	49	160	209	35.6
Private Banks					
Awash International Bank	1994	31	29	60	10.2
Dashen Bank	1995	26	29	55	9.4
Abyssinia Bank	1996	25	22	47	8.0
Wegagen Bank	1997	23	27	50	8.5
United Bank	1998	26	15	41	7.0
Nib International Bank	1999	28	17	45	7.7
Cooperative Bank of Oromia	2004	4	29	33	5.6
Lion International Bank	2006	9	11	20	3.4
Oromia International Bank	2008	4	21	25	4.2
Zemen Bank	2008	1	0	1	0.2
Bunna International Bank	2009	1	0	1	0.2
Birhan International bank	2009	-	-	-	
Total Private Banks		178	200	378	64.4
Grand Total Commercial Banks		**227**	**360**	**587**	**100**

Source; *National Bank of Ethiopia Quarterly Bulletin*; September 2010

Generally, the following five principal events have been occurred in Ethiopian banking history related to Ethiopia political instability since 1905.

- The first event was establishment of the Bank of Abyssinia in 1906, marking the advent of banking into the country.
- The second event was fascist Italian invasion in 1936, when, following liquidation of the Bank of Ethiopia, a broad colonial banking network, extended to encompass all Italian possessions in the Horn of Africa (Eritrea, Ethiopia and Somalia) and closely linked with the metropolitan financial system, was set up in the country.
- The third event was, in 1943, establishment of the State Bank of Ethiopia, marking the rebirth of the Ethiopian independent banking. This occurred during World War II after liberation of the country from fascist Italy.
- The fourth event was the revolution of 1974, which wiped out the monarchy, nationalized companies and shaped a "socialist banking" two-tier model "suited" to Ethiopia, the whole credit system being based on the central bank and three state-owned financial institutions, each of them enjoying monopoly in its respective market.
- The fifth event was the collapse of socialist regime followed by a financial sector reform and liberalization according to Monetary and Banking Proclamation number 84/1994.

1.3 Statement of the Problem

During the last seven years Ethiopia has experienced a remarkable GDP growth and it is expected to continue for the future. As recognized by economists and finance specialists, the role of banks is essential for the development of an economy. In addition, commercial banks always play an important role in the economic development of every country. During the last decade, the banking sector of Ethiopia has experienced major transformation in terms of investment and geographic distribution due to the financial sector reform and liberalization act of 84/1994. In the light of these developments, currently the country has three public-owned and 12 private commercial banks which are operating throughout the country. In addition, there are 4 additional private banks that are under establishment and will get operational in the near future and raise the number of private commercial banks to 16.

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

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

Generally, internal profitability determinants can be accounted and analyzed as bank specific determinants of profitability because they are controllable by the specific bank management. On the other hand, external determinants could be analyzed under industry-specific determinants which are variables specific to the banking sector alone such as market growth, and under macroeconomic determinants such as countrywide economic growth. Therefore, the study examined, in a single equation framework, bank-specific, industry-specific and macroeconomic determinants of Ethiopian commercial banks profitability in the first decade of twenty-first century, i.e., from 2001 to 2010.

1.4 Objective of the Study

General objective;

The primary objective of the study is examining the impact of bank-specific, industry-specific and macroeconomic bank profitability determinants in Ethiopian commercial banks.

Specific objectives;

Specific objectives of the study include;

- Examining the impact of capital, bank size, loans, non-performing loans, deposits, fee based service, and non interest expense on the profitability of Ethiopian commercial banks;
- Analyzing the significance of bank specific profitability determinants on Ethiopian commercial banks profitability;
- Examining the impact of market concentration on the profitability of Ethiopian commercial banks;
- Analyzing the significance of market concentration on Ethiopian commercial banks profitability;
- Examining the impact of economic growth, real interest rate and inflation on Ethiopian commercial banks profitability; and
- Analyzing the significance of macroeconomic profitability determinants on Ethiopian commercial banks profitability.

1.5 Hypothesis of the Study

Hypothesis of the study stand on the theories related to a bank's profitability that has been developed over the years by banking area researchers. The traditional theory of the firm assumes that a firms objective is simply to maximize profits, and on the basis of this assumption a large number of testable predictions about how profit -maximizing firms will behave, and the resultant performance of the industry, can be derived. Therefore, the

followings three research hypothesis about the determinants of bank profitability are specified based on theories and past empirical studies related to a bank's profitability.

Hypothesis 1. Bank specific determinants such as capital, loans and advances, credit risk and non interest expense determinants significantly affect bank profitability.

Hypothesis 2. The amount of loan issued and economic growth has a positive impact on banks profitability.

Hypothesis 3. Credit risk, non interest income and non interest expense have a negative relationship with banks profitability.

1.6 Significance of the Study

Banks play unquestionable role in sustainable economic development of a country through providing the required financial services to the economy. Commercial banks, in particular, can be taken as a lung for every business activities in which the cash, oxygen, in and out breathe is takes place. Hence, a well organized and structured commercial bank services are required to have a better business activity and sustainable economic development. As described in the previous sections, this study is designed to investigate the significance of all types of bank profitability determinants in Ethiopia commercial banking sector. As a result identifying the bank profitability determinants and understanding their level of significance in Ethiopia context could have a great importance to both internal and external stakeholders of the bank.

This study have a great importance for the management of Ethiopian commercial banks through identifying significant determining factors of profitability from worldwide experience. On the other hand, the study have a great significance for external

stakeholders such as investors those own shares on the banks, the community for which the financial service is provided, and the government which regulate the sector for the sake of the safety of the public resource and sustainable economic development.

1.7 Scope and Limitation of the Study

The determinants of commercial banks profitability that will be used in this study are those frequently described in conventional banking studies and literatures. Accordingly, the data required for defining bank specific variables and market concentration were limited to 10 years (2001-2010) balance sheet and income and loss statements of seven Ethiopian commercial banks such as Commercial Bank of Ethiopia, Awash International Bank, Dashen Bank, Abyssinia Bank, Nib International Bank, United Bank and Wegagen Bank which has been operating throughout 2000's. In addition, the study used bank sector data and countrywide macroeconomic data that have been driven from National Bank of Ethiopia and MoFED in order to define macroeconomic variables.

CHAPTER TWO

2. LITERATURE REVIEW

The review of empirical literatures on bank profitability determinants are organized in two parts namely internal and external determinants. The internal determinants includes variables driven from financial statement and variables internal by their vary nature but not displayed on financial statements. External determinants comprise review of industry-specific determinants which has impact on the banking sector profitability alone and macroeconomic determinants which affect all business activities of a given country. Finally, four market structure theories such as structure- conduct- performance hypothesis, efficient- structure hypothesis, expense preference hypothesis, and risk avoidance hypothesis developed by previous scholars and researchers are reviewed in detail. Unfortunately, no paper which is made on Ethiopian banks profitability is included in the review because, even though there is a study made on determinants of private banks' profitability in Ethiopia by Yigremachew Benti (2008), the paper is not accessible in free except the abstract.

2.1 Determinants of Commercial Banks Profitability: An Empirical Review

Commercial banks profitability could be affected by a number of determining factors. In most literatures bank profitability usually expressed as a function of internal and external determinants. Bourke (1989) also indicated that the determinants of commercial bank profitability can be divided into two main categories namely the internal determinants which are management controllable and the external determinants which are beyond the

control of management. Now let us see the first classification of commercial banks profitability determinant.

2.1.1 Internal Determinants

The internal determinants of commercial banks profitability are those management controllable factors which account for the inter-firm differences in profitability, given the external environment. Anna P. I. Vong and Hoi Si Chan (2008) define internal determinants of bank profitability as factors that are influenced by a bank's management decisions. As stated by Dr. Devinaga Rasiah (2010) internal determinants can be broadly classified into two sub-categories namely financial statement variables and non-financial statements variables. The financial statement variables are determining factors which are directly driven from items in a balance sheet and profit & loss accounts of the bank. On the other hand, the nonfinancial statement variables are those factors which do not directly displayed on the financial statements accounts.

2.1.1.1 Financial Statement Variables

Financial statement variables are those variables which relate to the balance sheet and profit & loss account. The balance sheet account includes asset, liabilities and equity balances and it indicates the financial position of the firms. Asset management is concerned with the asset portfolio decisions which attempt to maximize returns at an adequate level of liquidity. AGU, CC; (1992), as quoted by Devinaga Rasiah (2010), indicated that liability management on the other hand, is concerned with the decisions in relation to deposit mix, borrowings and capital which meet the dual objectives of minimizing funding costs and achieving a desired level of stability in available funds.

Hence, asset-liability portfolio decisions would certainly have an impact on commercial bank profitability. Since these decisions are controllable by management, they are thus categorized as internal determinants. On the other hand, profit and loss statement is directly related to income and expense accounts and indicates the operational performance of the management. Regarding the profit and loss statement the main emphasis would be confined to areas such as the amount of interest income, interest expense, income from fee-based services, and noninterest operational expenses. There are plentiful literatures made by using financial statement variables, both from balance sheet and profit and loss accounts, which determine commercial banks profitability. The most frequently used bank profitability determinants which are driven from financial statement include;

Capital: it is measured by the ratio of equity capital to total asset. Bank equity capital can be seen in two ways. Narrowly, as stated by Uhomoibhi T. Aburime (2008), it can be seen as the amount contributed by the owners of a bank (paid-up share capital) that gives them the right to enjoy all the future earnings. More comprehensively, it can be seen as the amount of owners' funds available to support a bank's business. The later definition includes reserves, and is also termed as total shareholders' funds. No matter the definition adopted, a bank's capital is widely used as one of the determinants of bank profitability since it indicates the financial strength of the bank. As it has been expected positive relationship between profitability and capital has been demonstrated by Berger (1995), Samy B. Naceur (2003), Athanasoglou *et al.* (2005), Indranarain Ramlall (2009), and Saira Javaid *et al.*, (2011).

Bank Size: In most literatures the effect of size on banks profitability are represented by total asset. Indranarain Ramlall (2009) indicated that size is used to capture the fact that larger banks are better placed than smaller banks in harnessing economies of scale in transactions and enjoy a higher level of profits. One of the most important questions underlying bank policy is which size optimizes bank profitability. According to Athanasoglou *et al.*, (2005) the effect of a growing size of a bank on profitability has been proved to be positive to a certain extent. Consequently, a positive relationship is expected between bank size and profitability by many banking area researchers. However, for banks that become extremely large, the effect of size could be negative due to bureaucratic and other reasons. Hence, the size-profitability relationship may be expected to be non-linear. Therefore most studies use the banks' real assets in logarithm and their square in order to capture the possible non-linear relationship. Athanasoglou *et al.* (2005), Indranarain Ramlall (2009), Dr. Rajesh K. Singh and S. Chaudhary (2009), and Devinaga Rasiah (2010) find positive relationship between bank size and profitability.

Asset Composition: which is explained by total loans divided by total asset, provides a measure of the main income source of the bank assets transferred to debtors' (Anna P. I. Vong and Hoi Si Chan, 2008). Traditionally, banks are intermediaries between lenders and borrowers. According to M. Abreu and V. Mendes (2002), other things assumed constant, the more the deposits that are transformed into loans bank performance, the higher the level of profit will be, therefore, it is expected to have a positive relationship with profitability. However, if a bank incurs higher cost on non-performing loans in order

to have a higher loan-to-asset ratio, then profits may decrease. On the other hand, asset composition is included in the study of profitability as an independent variable to determine the impact of loans on banks' profitability (Saira Javaid *et al.*, 2011). Almost all banking area researchers including M. Abreu and V. Mendes (2002), Anna P. I. Vong and Hoi Si Chan (2008), Dr. Rajesh K. Singh and S. Chaudhary (2009), and Devinaga Rasiah (2010) indicates a positive relationship between the amount of loan provided and profitability.

Deposit Fund: Commercial banks mainly depend on the funds deposited by their clients (the public) in order to lend it out and earn interest income. It is also the number one expense item for a banking sector because there is interest payment for different types of deposits. Deposits received by all commercial banks includes current or demand deposits, fixed or time deposits (term deposits), and saving deposit. On current or demand deposits, the banks do not pays interest in most countries; rather, it can be withdrawn in part or in full at any time by depositors through issuing cheques. Fixed / Time / Term deposits are interest bearing deposit which left with the bank for a certain (fixed) period of time and it incur a higher interest expense on banks. On the other hand, saving deposits is a deposit made by individuals and it can be withdrawn at anytime. It is subject to certain limitations regarding the amount and the frequency of withdrawals. Since withdrawal can take place at anytime, the commercial banks has to keep a certain proportion of their assets in liquid form. When we see the impact of deposit on commercial banks profitability, empirical evidence from Naceur and Goaied (2001) which is quoted by Uhomoibhi T. Aburime (2008) indicates the best performing banks are those who have

maintained a high level of deposit accounts relative to their assets. Increasing the ratio of total deposits to total assets means increasing the funds available to use by the bank in different profitable ways such as investments and lending activities. In turn, this should increase the bank's returns on assets *ceteris paribus.* In addition, since deposit is the major and perhaps the cheapest source of funding for banks, it impact banking performance positively as long as there is a sufficient demand for loans in the market (Anna P. I. Vong and Hoi Si Chan 2008). However, if there is insufficient loan demand, more deposits in fact may depress earnings, since this type of funding has its own cost. Although different studies said the relationship between deposit and profitability is ambiguous, Anna P. I. Vong and Hoi Si Chan (2008), Uhomoibhi T. Aburime (2008) and Saira Javaid *et al.*, (2011) indicate a positive relationship.

Credit Risk: It is measured by the ratio of loan loss provisions over total loans and advances. The loan loss provisions are reported on a bank's profit and loss account and it is a measure of capital risk, as well as credit quality of the bank. According to Vong and Hoi Si Chan (2008), if banks operate in more risky environments and lack the expertise to control their lending operations, it will probably result in a higher loan-loss provision ratio. On the other hand, literatures suggest that increased exposure to credit risk is normally associated with decreased firm profitability. Therefore, as indicated by Athanasoglou *et al.* (2005), banks would increase profitability by improving screening and monitoring of credit risk and such policies. Additionally, in most countries central banks set some specific standards for the level of loan-loss provisions to be adopted by the country's banking system. In view of these standards, bank management should

adjust provisions held for loan losses portfolio, and in most studies credit risk are modeled as a predetermined variable. A negative effect of the loan loss provision relative to total loans on banks profitability are witnessed in all literatures reviewed by this study such as T. Atemnkeng and N. Joseph (2000), Athanasoglou *et al.* (2005), Kyriaki Kosmidou *et al*, (2006), Athanasoglou *et al*, (2006), Uhomoibhi T. Aburime (2008), Vong and Hoi Si Chan (2008), Valentina Flamini *et al,* (2009), A. Dietrich and G. Wanzenried (2009), and Indranarain Ramlall (2009).

Fee Based Service: The importance of fee-based services of banks and their product diversification is captured by the non-interest income to gross income ratio. Although fee-based services add income to banks, those services in general generate lesser profits as compared with interest income from loans. Therefore, when banks shift from interest income services to non-interest income services, profitability may decline, thereby, the ratio is expected to have a negative effect on profitability. Vong and Hoi Si Chan (2008) consider the impact of income from fee-based services on Macao commercial banks profitability and got a negative relationship between them.

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

expenses will increase efficiency and thereafter raise profits. Athanasoglou *et al.* (2005), Vong and Hoi Si Chan (2008), and A. Dietrich and G. Wanzenried (2009) indicate a negative relationship between the level of operating expense and bank profitability.

Market Share: M. Abreu and V. Mendeth (2002) defined bank market share as bank's loans over country's Domestic Credit. Domestic Credit of the country are used as a denominator because they were unable to get information on total bank loans at the country level and the result shows positive relationship between this ratio and banks profitability. However, Vong and Hoi Si Chan (2008) captured the market share of each individual bank by the value of deposits in logarithms. The log of deposits was used instead of deposits in order to reduce the scale effect. Vong and Hoi Si Chan (2008) expect that this variable has a combined effect on profitability. A positive relationship indicates that the bank enjoys economies of scale, while a negative relationship implies the bank suffers from diseconomies of scale when it expands to a larger size. Finally the study result shows a negative relationship of market share with profitability.

2.1.1.2 Non Financial Statement Variables

Non-Financial statement variable comprises variables which have an indirect impact on items in the financial statements while do not directly displayed on the financial statements accounts. Variables reviewed in this category include management quality, efficiency and productivity, age of the bank, and number of branches.

Management Quality: The management of the banking institution itself is a prerequisite for achieving profitability and stability of a bank. There is evidence that a good management raise profits and market shares (Athanasoglou *et al.*, 2005). On the other

hand, where management quality is low and managerial monitoring is imperfect, some lazy workers will not exert full effort on their duties and observing that the remaining good workers may discouraged for work. Finally the total sum effect will reduce profitability. In the same vein, according to Devinaga Rasiah (2010), where management quality is low and the board of directors does not provide honest and effective leadership, they will often being more concerned with securing credit facilities for themselves, and then prudent lending practices cannot be followed. These have the net effect of increasing the ratio of substandard credits in the bank's credit portfolio and reduce the bank's profitability.

Efficiency and Productivity: In recent years banks have faced severe competition due to the lowering of barriers to entry and the globalization of the industry, which has forced them to reorganize (Athanasoglou *et al.*, 2005). They have been targeting high levels of efficiency and productivity growth both by keeping the labor force steady and by increasing overall output. Indranarain Ramlall (2009) said the higher the efficiency level of a bank, the higher the profits level. Hence a positive relationship is expected between efficiency and productivity as well as profitability of the bank. Empirical evidence from Athanasoglou *et al.* (2005) shows that labour productivity growth has a positive and significant effect on bank profitability.

Bank Age: Newly established banks are not particularly profitable in their first years of operation, as they place greater emphasis on increasing their market share, rather than on improving profitability (Athanasoglou *et al.*, 2005). On the other hand, A. Dietrich and G. Wanzenried (2009) indicate that older banks expected to be more profitable due to their

longer tradition and the fact that they could build up a good reputation. Obviously, the above empirical studies those include bank age as one of their explanatory determinant indicates a positive relationship between age and profitability.

Number of Bank Branches: Heaster and Zoellner (1966), as quoted by Devinaga Rasiah (2010), considered number of branches as one of the explanatory variables in their profitability study. They found that the number of branches had no effect on profitability and also it can be captured by other variables such as the amount of deposit received or the amount of loan provided. Emery (1971), again as quoted by Devinaga Rasiah (2010), studied the relationship between the status of the branch categories namely unit branch, limited branch and state -wide branch. Using analysis of variance, Emery (1971) found that there was a significant difference in terms of returns among these three categories of branches.

2.1.2 External Determinants

The External determinants of commercial bank profitability are those factors which are external to the commercial banks and hence outside the control of management. As defined by Athanasoglou *et al.*, (2005) the external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions. Unlike the internal determinants, external determinants are indirect factors, which may be uncontrollable, but nevertheless influence the bank's profitability. Although the commercial banks cannot control these indirect factors but can build flexibility into their operating plans to react to changes in these factors (D. Rasiah, 2010). The following sections discussed about external

determinants of commercial bank profitability such as industry-specific determinants and macroeconomic variables.

2.1.2.1 Industry Specific Determinants

Ownership, regulation and market concentration are principal bank profitability determinants that has been used by varies banking area empirical studies. The reviews of these industry specific variables are given in the following sections.

Ownership: In the literatures, ownership is widely reported to be a determinant of bank profitability. According to Athanasoglou *et al.*, (2005) a relationship between bank profitability and ownership may exist due to spillover effects from the superior performance of privately-owned banks compared with publicly-owned banks, which do not always aim at profit maximization. Privately owned banks have been assessed to be more profitable than state owned (public) counterparts conceived that public banks' low profitability is due to the fact that, rather than maximizing profits, they respond to a social mandate. On the other hand, Uhomoibhi T. Aburime (2008) have concluded that foreign owned banks are more profitable than their domestic counterparts in developing countries and less profitable than domestic banks in industrial countries, perhaps due to benefits derived from tax breaks and other preferential treatments.

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

Frame et al. (1994), as quoted by Dr. Devinaga Rasiah (2010), showed that the banking industry is among the most heavily regulated industries in the world. Theoretically, regulation in banking is based on standard assumption that banks are profit maximizing units. The main reason why regulations have been imposed on the banking industry is that their healthy operation is critical for the over all economic stability and their failures has a huge negative signaling impact to the economy.

Concentration: The term 'concentration' emerged from the structure- conduct-performance theory (SCP theory) which postulates that market concentration encourage collusion among firms in the market and earns monopoly profits. There are different definitions and measurements for market concentration which is given by different banking area researchers. P. Yu and W. Neus (2003) measure the degree of concentration in the banking sector by using the size of bank loans and rely upon the Herfindahl index (HERF). Athanasoglou *et al.*, (2005) measure concentration using the 'Herfindahl-Hirschman (H-H) index and they defined it as the difference between the product price and the marginal cost, divided by the product price. On the other hand, A. Dietrich and G. Wanzenried (2009) define the bank concentration variable as the ratio of the three largest banks' assets to the total assets of the entire banking sector. In the normal circumstances, a higher bank concentration might be the result of a tougher competition in the banking industry, which leads to negative relationship between performance and market concentration. However, if collusion occurs among firms, it may result that higher rates may charged on loans and lower interest rates may paid on deposits, then it may have a positive impact on profitability. An empirical study of P. Yu1 and W. Neus (2003) which

is made on German banking profitability indicates a positive relationship between market concentration and profitability. However, a study made by Athanasoglou *et al.*, (2005), and A. Dietrich and G. Wanzenried (2009) in Greece and Switzerland banking sector respectively indicates a negative relationship between market concentration and banks profitability.

2.1.2.2 Macroeconomic Variables

Banks has a majour role in economic activity of every countries throught provision of financial services. In addition to banks influense on economic activities, macroeconomic factors also affect the performance of commercial banks in a given country. The following macroeconomic factors are reviewd from different banking area emperical studies.

Economic Growth: Economic growth is measured by the real GDP growth. According to previous literatures GDP growth is expected to have a positive impact on bank profitability. This is because, according to Vong and Hoi Si Chan (2008), the default risk is lower in upturns than in downturns. Besides, higher economic growth may lead to a greater demand for both interest and non-interest activities, thereby improving the profitability of banks.

Interest Rate: Interest expenses and interest income, affect net interest income and hence bank profitability. In view of this, interest rates have been considered as determinants of bank profitability in most banking area researches. The real interest rate is also expected to have a positive relationship with profitability. In the essence of lend-

long and borrow-short argument, banks, in general, may increase lending rates sooner by more percentage points than their deposit rates. In addition, the rise in real interest rates will increase the real debt burden on borrowers. This, in turn, may lower asset quality, thereby inducing banks to charge a higher interest margin in order to compensate for the inherent risk (Vong and Hoi Si Chan, 2008). Furthermore, since local monetary policies and supply and demand conditions affect interest rate, Devinaga Rasiah (2010) has included it as an external profitability determinant in his study.

Inflation: Inflation had been one of the least researched issues in earlier bank profitability studies. Revell (1979), as quoted by Devinaga Rasiah (2010), had suggested that inflation may be a factor in the causation of variations in bank profitability although it is worth noting that researchers had paid very little attention on the impact of inflation on commercial bank profitability. During inflation, the central bank can raise the cost of borrowing and reduce the credit creating capacity of commercial banks. Empirical studies on the relationship between inflation and bank profitability suggest that if a bank's income rises more rapidly than its costs, inflation is expected to exert a positive effect on profitability. On the other hand, a negative coefficient is expected when its costs increase faster than its income.

2.2 Market Structure Theories and Bank Profitability

The traditional theory of the firm assumes that a firm's objective is simply to maximize profits. On the basis of this assumption a large number of testable predictions about how profit-maximizing firms will behave, and the resultant performance of the industry, can be derived. However, According to Dr. Devinaga Rasiah (2010), the assumption of profit

maximization is criticized on the following two grounds. First, this assumption may appear to be simple and unambiguously objective in theory, but may not be so in practice. That means it is only applicable for owner - managed firms which produce a single product/service because the owner- manager is free to choose the level of output and price that would maximize profitability. On the other hand, this assumption may not be applicable for an industry which involves in a variety of products/services, and faced with much more complex decisions to be taken in a dynamic and uncertain environment. Second, today's firms are not managed by their owners. The decision about how the firms should behave is taken by managers, who may be interested in other motives than maximum profits. Therefore, the following sections will focus on advanced theories and hypothesis, apart from profit maximization goal, related to a bank's profitability that have been developed over the years by banking area researchers.

2.2.1 The Structure - Conduct - Performance (SCP) Hypotheses

This hypothesis assumes that conduct or rivalry in a market is determined by market structure conditions, especially the number and size distribution of firms and the conditions of entry. This rivalry leads to unique levels of prices, profits and other aspects of market performance. Through the linkages of conduct, the performance of firms in a market is tied to the structure of the market. Fraser, et al (1972), as quoted by Dr. Devinaga Rasiah (2010), indicated that the assumption of this (SCP) hypothesis is that the degree of concentration of a market, i.e. the number and size distribution of firms in the market, exerts a direct influence on the degree of competition among firms.

Chirwa (2003) investigates the relationship between market structure (concentration) and profitability of commercial banks in Malawi using time series data between 1970 and 1994. The competition in the main markets for commercial bank services increases due to an increase in the number of financial institutions. The author used time-series techniques of co-integration and error-correction mechanism to test the collusion hypothesis. He wants to find whether a long-run relationship exists between profits of commercial banks and concentration in the banking industry. Then, he concludes that a long-run relationship between profitability and concentration, capital-asset ratio, loan-asset ratio, assets, demand deposits-deposits ratio, market deposits and market growth, exists in commercial banks.

2.2.2 Efficient-Structure (ES) hypothesis

This hypothesis was first introduced by Demsetz (1973) and then expanded by Peltzman (1977). It states that the more efficient firms gradually increase in size and market share because of their ability to generate higher profits, which usually leads to higher market concentration. Thus, the positive relationship between profits and concentration is explained by lower cost achieved through either superior management or production processes. On the other hand, as quoted by Dr. Devinaga Rasiah (2010), this hypothesis (ES) was first applied in banking by Smirlock (1985) and he found that market share rather than concentration had a significant positive impact on banks profitability. However, market share was found to be positively and significantly related to profitability even after controlling for concentration. These results tend to support the (ES) hypothesis in banking markets.

2.2.3 Expense- Preference (EP) Hypothesis

This hypothesis was introduced by Becker (1957), which was further developed by Williamson (1963), and used in banking by Edwards (1977). In contrast to profit-maximizing policy, the Expense Preference hypotheses (EP) consider the firm as a utility maximizing unit through the pursuit of non-profit-maximizing policies. In particular, the manager increased staff expenditures, managerial emoluments and discretionary profit for which they have a positive preference. Bourke (1989) employed a more robust test to investigate the presence of the expense preference behavior in banking. He used a value added measure of profitability, in order to remove the effect of managerially-induced expenditure and labor union negotiated wage demands from net income. In the banking context, value added could be defined as loan interest and other revenue less deposit interest and other non-wage expenses. Hence, support for the expense preference hypothesis would be found, if the coefficient of the concentration variable remains positive but increase in magnitude when a value added measure of profitability is used as the dependent variable. He observed a positive relationship between concentration and pre-tax return on assets. However, contrary to expectation the sign of the coefficient of the concentration variable was negative when a value added measure of profitability was used as the dependent variable. Thus, Bourke's findings do not support the existence of the expense preference hypothesis in banking.

2.2.4 Risk Avoidance Hypothesis

The Risk- avoidance hypothesis was first introduced in the manufacturing industry by Galbraith (1967) and then expanded by Cave (1970). The Galbraith- Cave or risk avoidance hypothesis as referred by Dr. Devinaga Rasiah (2010) indicates that banks located in more concentrated markets may choose to trade off some of their potential monopoly profit for reduction in risk by choosing safer portfolios. Thus, Clark (1986), again as quoted by Dr. Devinaga Rasiah (2010), had indicated that selecting a safer portfolio of assets and liabilities in line with their risk-preference, banks located in concentrated markets with monopoly power, may reduce risk at the expense of some monopoly profit. Hence, the risk avoidance hypothesis may provide an explanation for the lack of relationship between concentration or monopoly power and profitability.

CHAPTER THREE

3. RESEARCH METHODOLOGY

Research on the determinants of bank profitability could be made using either the Returns on Assets (ROA) or Return on Equity (ROE) as a profitability measures. ROA reflects the ability of a bank's management to generate profits from the bank's assets while ROE indicates the return to shareholders on their equity and equals to ROA times the total assets-to-equity ratio. The latter is often referred to as the bank's equity multiplier, which measures financial leverage. Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE. Since an analysis of ROE disregards the greater risks associated with high leverage and financial leverage is often determined by regulation, ROA emerges as the key profitability measure for the evaluation of bank performance (IMF, 2002). Therefore, this study is made by considering return on asset as explained variables, and using eight bank specific, one industry specific and three macroeconomic profitability determinants as explanatory variables.

3.1 Data

The data used for this particular study is secondary data. The bank specific variables of the study is driven from balance sheet and income and loss statement of seven Ethiopian commercial banks such as Commercial Bank of Ethiopia, Awash Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib Bank. The above banks which are included in the study have been operating for the last 10 years, from the year 2001 up to now. For this regard, 10 years (2001-2010) financial statement of the selected banks has used in the analysis and all the financial statements are consolidated on June 23 (Sene

30) of each year. Regarding the industry and macroeconomic variables, the data is obtained from National Bank of Ethiopia (NBE), which regulates the banking sector of the country, and from Ministry of Finance and Economic Development of Ethiopia (MoFED) which regulate the macroeconomic issues of the country.

3.2 Definition of Variables

This study examined the profitability of Ethiopian commercial banks by using return on asset (ROA) as a dependent variable. ROA, which is defined as net income divided by total asset, reflect how well bank managers are using the banks real investment resource to generate profit. Regarding the determining factors of profitability, the study identified the following explanatory variables under bank specific, industry specific and macroeconomic determinants. The brief descriptions of those explanatory variables are discussed as follows.

Bank Specific Determinants

- **Equity Capital (CAP):** This is measured by total equity over total asset, reveals capital adequacy and capture the general average safety and soundness of the financial institution. The study employed this ratio to proxy the capital variable because ROA has been used as a measure of profitability. It is not appropriate to include CAP in a profitability equation if return on equity is used as dependent variable. On the other hand, since there is no perfect capital market with efficient information asymmetry in this respective study area, it is difficult to determine the relationship between the capital ratio and profitability.

- **Bank Size (SIZE):** One of the most important questions regarding bank profitability is whether or not bank size optimizes profitability. Generally, the effect of size on profitability is expected to be positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucracy and other reasons. Hence, the size-profitability relationship may be expected to be non-linear and the study also used the banks' logarithm of total assets and their square in order to capture the possible non-linear relationship and to remove the scale effect.
- **Loans and Advances (LOAN):** This is proxied by total loans divided by total asset, provides a measure of income source. Loans are the largest segment of interest bearing assets. Other things being constant, the more the deposits that are transformed into loans, the higher the level of profit will be, therefore, it is expected to have a positive relationship with bank performance.
- **Deposits:** there are three types of deposits received by commercial banks such as saving deposit, fixed deposit and demand deposit. However, only saving and fixed deposits are interest bearing deposits. Therefore, the impact of interest expense on banks profitability are captured by considering saving deposit to total asset ratio (SAVED) and fixed deposit to total asset ratio (FIXD). Being the major and perhaps the cheapest source of funding for banks, it is generally believed that customer deposits impact banking performance positively as long as there is sufficient demand for loans in Ethiopian financial market. However, National Bank of Ethiopia regulates the level of loan provision allowed to each banks and

therefore more deposits may depress earnings, since this type of funding has its own cost.

- **Non Interest Income (NII):** The importance of fee-based services of commercial banks and their product diversification is captured by non-interest income to total income ratio. Although fee based services in general generate lesser income than loans, it is expected to add something on banks profit and have a positive relationship with profitability. However, when banks shift their attention from interest income services to non-interest income services, profitability may decline, therefore, this ratio may have a negative effect on profitability.
- **Non Interest Expense (NIE):** In addition to interest expenses paid for saving and fixed deposits, commercial banks incur operating cost and depreciation expenses. To capture the impact of those non interest expenses on banks profitability, the factor is measured by the ratio of non interest expenses to total asset. It is expected to be negatively related with profitability, since improved management of these expenses will increase efficiency and thereafter raise profits.
- **Credit Risk (CR):** To proxy this variable the study used the loan-loss provisions to total loans ratio. Theories suggest that increased exposure to credit risk is normally associated with decreased firm profitability and, hence, it is expected to have a negative relationship with banks profitability.

Industry Specific Determinant

- **Market Concentration (CONS):** it is the number, size and distribution of banks in a particular market or country. As indicated in other empirical studies market

concentration is captured by Herfindahl-Hirschman (H-H) index which is the sum of the square of market share of the sample banks included in this particular study. Market share of each bank is measured by the ratio of a bank's total asset to total asset of all banks. Since highly concentrated market lacks proper competition as to setting the price of banking services, it makes the existing banks more profitable. On the other hand, when the concentration of the market reduced and the size and distribution of banks become more dispersed, the banking sector profitability is expected to reduce. Therefore, market concentration and banks profitability is expected to be negative.

Macroeconomic Determinants

- **Economic Growth (GDP):** This is measured by the real GDP growth rate and it is hypothesized to affect banking profitability positively. This is because the default risk is lower in upturn than in downturn economy. In addition, higher economic growth may lead to a greater demand for both interest bearing and non-interest bearing financial services, thereby improving the profitability of banks.
- **Lending Interest Rate (INT):** The real interest rate is expected to have a positive relationship with profitability in the essence of lend-long and borrow-short argument (Vong and Hoi Si Chan, 2008). That means banks may increase lending rates sooner by more percentage points than their deposit rates. On the other hand, the rise in real interest rates may increase the real debt burden on borrowers and this may lower asset quality, thereby interest rate may have a negative impact on profitability.

- **Inflation (INF):** High inflation rate is associated with higher costs as well as higher income. If a bank's income rises more rapidly than its costs, inflation is expected to exert a positive effect on profitability. On the other hand, a negative coefficient is expected when its costs increase faster than its income

Generally, the study considered the above eight bank specific, a single industry specific and three macroeconomic bank profitability determinants. The next table summarizes the above specified dependent and independent variables of the study with their respective notation, measurement and expected signs.

Table 2. List of Variables and their Respective Characteristics

		Variables	Notation	Measurement	Expected sign
Dependent variable		Profitability	ROA	Net income / total assets	NA
Independent Variables	Bank Specific Determinants (BSD)	Capital	CAP	Equity / total Asset	? **
		Bank Size	SIZE	Log of Total Asset *	+
		Loans & Advances	LOAN	Total Loan / total asset	+
		Saving Deposit	SAVED	Saving Deposit / Total Asset	+
		Fixed Deposit	FIXD	Fixed Deposit / Total Asset	–
		Non Interest Income	NII	Noninterest income / total income	+
		Non Interest expense	NIE	Noninterest Expense / total Asset	–
		Credit Risk	CR	Loan loss provision / total loan	–
	Industry specific Determinant (ISD)	Market Concentration	CONS	HH Index	–
	Macroeconomic Variables (MED)	Economic growth	GDP	Real GDP growth	+
		Saving interest rate	INT	Real interest rate	+
		Inflation	INF	Inflation rate	?

* Logarizm of asset is used in order to reduce the scale effect

** The question mark (?) indicates the possibility of both signs on that specific determinant

3.3 Methodology

The study used a panel regression technique to analyze the impact of bank specific, industry specific as well as macroeconomic determinants on Ethiopian commercial banks profitability. This is because panel data has the advantage of giving more informative data as it consists of both the cross sectional information, which captures individual

variability, and the time series information, which captures dynamic adjustment. Panel modeling could help to identity a common group of characteristics while, at the same time, taking in to account the heterogeneity that is present among individual units. In addition, this technique allows studying the impact of industry specific and macroeconomic determinants on profitability after controlling the bank-specific characteristics, with less collinearity among variables, more degrees of freedom and greater efficiency. On the other hand, the consensus from the literature on bank profitability is that the appropriate functional form of analyzing the determinants of bank profitability is the linear form. Therefore, the study used a linear model to analyze the cross-sectional and time series data of seven commercial banks, one public and six private banks, of Ethiopia.

The general linear regression equation of the study is:

$$ROA_{it} = \beta_0 + \sum\beta_1 (BSD)_{xit} + \sum\beta_2 (ISD)_{yt} + \sum\beta_3 (MED)_{zt} + e_{it}$$

Where;

- ROA_{it} is a dependent variable for bank i at time t.
- $\beta_0, \beta_1, \beta_2$ and β_3 will be estimated coefficients including the intercept.
- $(BSD)_{xit}$ represent the x-th bank-specific determinants of bank i at time t.
- $(ISD)_{yt}$ represent the y-th industry specific determinants at time t.
- $(MED)_{zt}$ represent the z-th macroeconomic determinants at time t.
- e_{it} is the error term.

The comprehensive regression equation of the study is:

$$ROA_{it} = \beta_0 + \beta_1 CAP + \beta_2 SIZE + \beta_3 LOAN + \beta_4 SAVED + \beta_5 FIXD + \beta_6 NII + \beta_7 NIE + \beta_8 CR + \beta_9 CONS + \beta_{10} GDP + \beta_{11} INT + \beta_{12} INF + e_{it}$$

Note: The description of notations, i.e. CAP, SIZE …, included in the above comprehensive regression equation has given in the previous table, table 2. In addition, in the next chapter, there is a broad analysis of the above econometrics model in order to justify the validity and stability of the study variable specifications.

CHAPTER FOUR

4. EMPIRICAL RESULTS

4.1 Econometric Analysis

The empirical evidence on the determinants of Ethiopian commercial banks' profitability is studied based on balanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment spanning from the period 2001 up to 2010 and a cross section segment which considered seven Ethiopian commercial banks such as Commercial Bank of Ethiopia (CBE), Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank. To test the relationship between these commercial banks profitability (return on asset) and identified profitability determinants the following linear regression model is developed.

$$\pi_{it} = \alpha + \beta \sum_{n=1} X^{n}_{it} + e_{it}\,; \quad e_{it} = v_i + \mu_{it} \qquad (1)$$

Where; π_{it} is the profitability (Return on Asset) of bank i at time t, where $i = 1, \ldots, N$; $t = 1, \ldots, T$, α is a constant term, β is estimated coefficient, X^{n}_{it} are the vector of n explanatory variables and e_{it} is the disturbance (error term) with v_i the unobserved variable effect and μ_{it} the idiosyncratic error. This is a one-way error component regression model, where $v_i \sim IIN(0, \sigma^2 v)$ and independent of $\mu_{it} \sim IIN(0, \sigma^2 u)$. On the other hand, the explanatory variables which are generically expressed in the above X^{n}_{it} vector are grouped, as discussed in the methodology part, into bank-specific, industry-specific and macroeconomic variables. The general specification of model (1) in to these separated classifications is made as follows:

$$\pi_{it} = \beta_0 + \beta_1 \sum(BSD)_{xit} + \beta_2 \sum (ISD)_{yt} + \beta_3 \sum (MED)_{zt} + e_{it} \quad (2)$$

Where; π_{it} is a dependent variable for bank *i* at time *t*; β_0, β_1, β_2 and β_3 is estimated coefficients including the intercept; $(BSD)_{xit}$ represent the *x-th* bank-specific determinants of bank *i* at time *t*; $(ISD)_{yt}$ represent the *y-th* industry specific determinants at time *t*; $(MED)_{zt}$ represent the *z-th* macroeconomic determinants at time *t*; and e_{it} is the error term.

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

$$\pi_{it} = \beta_0 + \beta_1(CAP) + \beta_2(SIZE) + \beta_3(LOAN) + \beta_4(SAVED) + \beta_5(NII) + \beta_6(FIXD) + \beta_7(NIE) + \beta_8(CR) + \beta_9(CONS) + \beta_{10}(GDP) + \beta_{11}(INF) + \beta_{12}(INT) + e_{it}$$

The definition of all individual variables included in the above equation has given in the methodology part of the study. Furthermore, bank profits show a tendency to persist over time (serially correlated), reflecting impediments to market competition, informational symmetry and/or sensitivity to regional/macroeconomic shocks (Berger *et al.*, 2000). Therefore, expecting a dynamic structure of the banking sector profits, the study adopts a dynamic specification of the model by including a one year lagged profitability variable $(\pi_{i,t-1})$ on the right hand side of the previous equation. The equation augmented with lagged dependent variable (Return on Asset) is:

$$\pi_{it} = \beta_0 + \beta_1 (\pi_{i,t-1}) + \beta_2 \sum(BSD)_{xit} + \beta_3 \sum(ISD)_{yt} + \beta_4 \sum(MED)_{zt} + e_{it} \quad (3)$$

The comprehensive regression equation of model (3) is:

$$\pi_{it} = \beta_0 + \beta_1(LAGROA) + \beta_2(CAP) + \beta_3(SIZE) + \beta_4(LOAN) + \beta_5(SAVED) + \beta_6(NII) + \beta_7(FIXD) + \beta_8(NIE) + \beta_9(CR) + \beta_{10}(CONS) + \beta_{11}(GDP) + \beta_{12}(INF) + \beta_{13}(INT) + e_{it}$$

Finally, the study have made autocorrelation test using Durbin-Watson statistic (DW stat). Autocorrelation is a mathematical representation of the degree of similarity between a given time series and a lagged version of itself over successive time intervals. Durbin Watson is a test for first order autocorrelation – i.e., it tests only for a relationship between an error and its immediate previous value (Chris Brooks, 2008). The Durbin-Watson stat result always fall between 0 and 4, and the results between 0-1 indicates a negative autocorrelation, 1-1.5 and 2.5-3 are inconclusive regions, 3-4 indicates positive autocorrelation, and result approaching 2 from both sides indicates no autocorrelation in the residuals.

4.2 Result and Discussion

This section provides empirical evidence on the determinants of profitability in Ethiopia banking industry. There are a number of studies made on determinants of bank profitability in different countries. Profitability has been measured by return on asset and/or net interest margin by the previous studies. This study used return on asset as a profitability measure because, in addition to interest income and expense, Ethiopian banks enjoy high amount of revenue from charge based activities and incur huge amount of non interest expenses. On the other hand, most studies have been identified profitability factors under the classification of internal and external variables. Other studies classified the explanatory variables under bank specific, industry specific and

macroeconomic variables. This study also classifies identified profitability determinants in to three groups.

The first group, bank specific factors, includes factors which are controllable by the management of a bank such as capital, bank size, loans and advances, saving deposit, fixed deposit, non interest income, non interest expense, and credit risk. The second group is industry specific variable which has only one explanatory factor called market concentration. The last group is macroeconomic determining factors that are beyond the control of specific bank management that include real GDP growth, inflation rate and saving interest rate.

The analysis starts with the broad statistical description of both dependent and explanatory variables of the study and it provides descriptive about statistical mean, maximum value, minimum value and standard deviation of each variables. The correlation among explanatory variables also discussed in the analysis. Finally, three econometric specifications are estimated under fixed-effect (model 2) and dynamic-effect (model 3) regression models. The first econometric regression is made by using only bank-specific variables. In the second regression, market concentration which is the only industry specific variables are added while in the third regression, in addition to those already mentioned factors, macroeconomic indicators are included. The estimations are performed by the ordinary least squares (OLS) technique, which is suitable for data sets where serial correlation and/or heteroscedasticity might not be present (Chris Brooks, 2008).

Table 3. Descriptive Statistics of Variables

variables	Mean	Maximum	Minimum	Std. Dev.
ROA	0.021646	0.0388	-0.0212	0.010614
CAP	0.095461	0.2699	0.0162	0.044446
SIZE	9.509354	10.8706	8.3541	0.565212
LOAN	0.516054	0.7466	0.1926	0.125774
FIXD	0.082147	0.2582	0	0.056835
SAVED	0.444144	0.6456	0.2307	0.115606
NII	0.455643	0.7199	0.2742	0.114046
NIE	0.025207	0.089	0.0087	0.012168
CR	0.013583	0.0972	0	0.017737
CONS	0.53295	0.703	0.4121	0.097979
GDP	0.08734	0.1357	-0.0216	0.048689
INF	0.1043	0.364	-0.106	0.126156
INT	0.113	0.1275	0.1075	0.007367

As stated in the above table, table 3, from the total of 70 observations, the highest return on asset is 0.0388 and the lowest return on asset is -0.0212. That means, the most profitable bank of the sample banks earned 3.9 cents of net income from a single birr of investment and the maximum loss incurred by one of the sample banks are a loss of 2.12 cents on each birr of investment. Regarding the loans and advances, on average, almost half of the total asset of the bank (0.52) is kept in terms of loan. From interest bearing deposits, average saving deposit to total asset ratio (0.44) is much higher than average fixed deposit to total asset ratio (0.08). Noninterest income of the banks, on average, is 45% of total income but noninterest expense to total asset ratio (2.5%) is small. The mean of market concentration which is defined by Herfindahl-Hirschman Index (HHI) is 0.53. HHI is a commonly accepted measure of market concentration and it takes into account the relative size and distribution of firms in a market and it approaches to zero when a market consists a large number of firms of relatively equal size. On the other hand bank

size which is measured by logarism of total asset has the highest standard deviation (0.56) that means it is the most deviated variable from its mean as compared to others. The smallest standard deviation is reported in saving interest rate (0.007) and return on asset (0.010614) variables.

Table 4. Correlation among Explanatory Variables

	SIZE	LOAN	FIXD	SAVED	NII	NIE	CR	CONS	GDP	INF	INT
CAP	-0.623	0.354	0.289	-0.084	-0.294	0.225	-0.137	0.117	-0.098	-0.081	0.162
SIZE	1	-0.723	-0.46	-0.191	0.487	-0.37	-0.062	-0.567	0.301	0.379	-0.103
LOAN		1	0.462	0.335	-0.651	0.332	0.008	0.22	-0.023	-0.13	-0.184
FIXD			1	-0.283	-0.259	0.197	0.144	0.099	-0.033	-0.029	-0.241
SAVED				1	-0.26	-0.01	-0.017	-0.002	0.03	-0.042	0.017
NII					1	-0.076	-0.195	-0.323	0.143	0.172	-0.084
NIE						1	0.214	0.366	-0.132	-0.266	0.276
CR							1	0.338	-0.391	-0.169	0.033
CONS								1	-0.519	-0.715	0.291
GDP									1	0.234	-0.266
INF										1	-0.518

A correlation is a single number that describes the degree of relationship between two variables. As indicated in the above correlation matrix all the highest (more than 50%) correlations that have occurred among explanatory variables are surprisingly inverse correlations. During the last 10 years the size of all banks (log of total asset) which are included in this study shows improvement. Increase in the size of the bank shows a higher negative correlation with loan to total asset ratio (-0.723), capital to total asset ratio (-0.623), and market concentration (-0.567). The correlation result of -0.723 and -0.623 implies, even though the size of all banks (total asset) has been increased for the

last 10 years, the contribution of loan and equity capital on banks investment is reduced. In addition, market concentration have had inversely correlated with macroeconomic variables such as inflation (-0.715) and real GDP growth (-0.519). This is because the concentration of Ethiopian banking sector is reduced through time and contrary inflation rate and GDP growth of the country increases. A strong negative correlation is also occurred between loan to total asset ratio and noninterest income (-0.651), and between inflation rate and saving interest rate (-0.518). A strong negative relationship between loan and non interest income implies the two sources of income of the banking sector goes in different directions. On the other hand, the highest positive correlation is occurred between bank size and noninterest income (0.48) that means, as described above, since the size of all banks increased time to time, the amount of non interest income earned by each banks also increased. In addition, the loan to total asset ratio and fixed deposit to total asset ratio shows the second highest positive correlation (0.46). The next tables (table 5, 6 and 7) show the fixed effect regression results of the study which considered the dependent variable (return on asset) is not serially correlated with its one year lagged value.

Table 5. Fixed Effect Regression Result of Bank- Specific Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.132485	0.028855	-4.591403	0.0000
CAP	0.086330**	0.022943	3.762732	0.0004
SIZE	0.011220***	0.002376	4.721652	0.0000
LN	0.073260***	0.012040	6.084564	0.0000
FS	-0.014094	0.019334	-0.728990	0.4688
SAVE	-0.004187	0.016397	-0.255351	0.7993
NII	0.041672***	0.009266	4.497224	0.0000
NIE	-0.184689	0.070155	-2.632577	0.0107
CR	-0.272342***	0.046876	-5.809885	0.0000
R-squared	0.714385	F-statistic	19.07180	
Adjusted R-squared	0.676928	Prob(F-statistic)	0.000000	
S.E. of regression	0.006033	Durbin-Watson stat	1.395218	

, **, and * denotes significance level of 10%, 5% and 1% respectively.*

Table 6. Fixed Effect Regression Result of Bank and Industry Specific Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009070	0.047868	0.189478	0.8504
CAP	0.035268	0.025485	1.383870	0.1715
SIZE	0.001509	0.003498	0.431347	0.6678
LN	0.055683***	0.012098	4.602679	0.0000
FS	-0.041613**	0.019347	-2.150940	0.0355
SAVE	0.012360	0.015738	0.785355	0.4353
NII	0.028250***	0.009299	3.038066	0.0035
NIE	-0.106593	0.067974	-1.568136	0.1221
CR	-0.243062***	0.043756	-5.554876	0.0000
CONS	-0.045858***	0.012925	-3.548074	0.0008
R-squared	0.763918	F-statistic	21.57216	
Adjusted R-squared	0.728506	Prob(F-statistic)	0.000000	
S.E. of regression	0.005530	Durbin-Watson stat	1.692802	

, **, and * denotes significance level of 10%, 5% and 1% respectively.*

Table 7. Fixed Effect Regression Result of All Determining Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005175	0.061055	0.084767	0.9327
CAP	0.037693	0.025004	1.507493	0.1372
SIZE	0.000840	0.003576	0.234964	0.8151
LN	0.053177***	0.014010	3.795567	0.0004
FS	-0.039948**	0.019379	-2.061377	0.0438
SAVE	0.011071	0.015875	0.697408	0.4884
NII	0.029338***	0.010586	2.771468	0.0075
NIE	-0.127836	0.078940	-1.619396	0.1109
CR	-0.209366***	0.045773	-4.574051	0.0000
CONS	-0.037426**	0.018026	-2.076212	0.0424
GDP	0.042578**	0.018290	2.327942	0.0235
INF	0.000314	0.009880	0.031807	0.9747
INT	0.020811	0.148869	0.139791	0.8893
R-squared	0.787711	F-statistic	17.62513	
Adjusted R-squared	0.743018	Prob(F-statistic)	0.000000	
S.E. of regression	0.005380	Durbin-Watson stat	1.723373	

, **, and * denotes significance level of 10%, 5% and 1% respectively.*

As described in the econometric analysis section variability in commercial banks profitability is not only explained by the specified bank specific, industry specific and macroeconomic factors. Instead, variability in commercial banks profitability (return on asset) could be attributable to those variables and its own past trend. To test the serial correlation between return on asset and its own one year lagged value the dynamic regression model (model 3) is developed and the regression result of this model is describe in the following tables (table 8, 9 and 10).

Table 8. Dynamic Effect Regression Result of Bank- Specific Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.144695	0.043778	-3.305178	0.0017
LAGROA	0.114601	0.100280	1.142812	0.2583
CAP	0.095335***	0.033487	2.846894	0.0063
SIZE	0.011573***	0.003725	3.106952	0.0030
LN	0.067721***	0.013283	5.098163	0.0000
FS	0.004529	0.023907	0.189441	0.8505
SAVE	-0.012655	0.018634	-0.679120	0.5000
NII	0.048088***	0.010224	4.703496	0.0000
NIE	-0.237690**	0.104752	-2.269074	0.0274
CR	-0.226447***	0.051376	-4.407682	0.0001

R-squared	0.730073	F-statistic	15.92770
Adjusted R-squared	0.684236	Prob(F-statistic)	0.000000
S.E. of regression	0.005987	Durbin-Watson stat	1.485913

, **, and * denotes significance level of 10%, 5% and 1% respectively.*

Table 9. Dynamic Effect Regression Result of Bank and Industry Specific Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.054448	0.070141	0.776269	0.4411
LAGROA	0.001417	0.097033	0.014605	0.9884
CAP	0.022456	0.037095	0.605378	0.5476
SIZE	-0.002151	0.005227	-0.411551	0.6824
LN	0.052645***	0.012862	4.093199	0.0001
FS	-0.037770	0.024985	-1.511735	0.1367
SAVE	0.007606	0.017957	0.423591	0.6736
NII	0.036429***	0.009905	3.678001	0.0006
NIE	-0.271563***	0.095898	-2.831794	0.0066
CR	-0.205379***	0.047183	-4.352838	0.0001
CONS	-0.061917***	0.017943	-3.450823	0.0011

R-squared	0.780369	F-statistic	18.47609
Adjusted R-squared	0.738132	Prob(F-statistic)	0.000000
S.E. of regression	0.005452	Durbin-Watson stat	1.620155

, **, and * denotes significance level of 10%, 5% and 1% respectively.*

Table 10. Dynamic Effect Regression Result of All Determining Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.077330	0.089619	0.862874	0.3924
LAGROA	-0.024802	0.098082	-0.252875	0.8014
CAP	0.020738	0.037901	0.547148	0.5868
SIZE	-0.003780	0.005449	-0.693752	0.4911
LN	0.049806***	0.016131	3.087571	0.0033
FS	-0.044409*	0.024769	-1.792949	0.0792
SAVE	0.010841	0.017899	0.605701	0.5475
NII	0.034802***	0.011694	2.976153	0.0045
NIE	-0.282897**	0.107332	-2.635718	0.0112
CR	-0.179977***	0.048834	-3.685470	0.0006
CONS	-0.067200**	0.029315	-2.292360	0.0262
GDP	0.030418	0.023613	1.288199	0.2037
INF	-0.008149	0.012846	-0.634353	0.5288
INT	-0.012619	0.183357	-0.068821	0.9454

R-squared	0.801186	F-statistic	15.18938
Adjusted R-squared	0.748440	Prob(F-statistic)	0.000000
S.E. of regression	0.005343	Durbin-Watson stat	1.545452

, **, and * denotes significance level of 10%, 5% and 1% respectively.*

The previous tables (table 5 - 10) which are summarized in the appendices shows the empirical results of the estimation of model 2 and 3 using fixed effect and dynamic effect regression models respectively. As indicated in the tables the two regression results (table 7 and 10) shows the highest explanatory power (R^2) of approximately 0.8 when both bank specific, industry specific and macroeconomic variables are included in the models. The R- squared result of 0.8 endorse that 80% of the variation in the dependent variable (return on asset) is explained by the independent variables of the model. The remaining 20% of the variation in the dependent variable is left unexplained by explanatory variables of the study.

According to the DW stat result of the study, except regression results of bank specific variables (table 5 and 8), there is no autocorrelation which occurred between the variables and their respective lagged value. On the other hand, under fixed effect regression model (table 6) the value of f- statistic is 17.6 and strongly significant at 1% significant level supporting the validity and stability of the model relevant for the study. In addition, the dynamic regression model f- statistic result is 15.2 which is slightly lower than the fixed effect model but highly significant even at less than 1% significant level. That means the dynamic model is relatively less valid and unstable than fixed effect regression model because dependent variable (return on asset) of the study may not be serially correlated with its own one year lagged value. Considering the validity of the models particularly the fixed effect regression model the following sections discussed about regression results.

Among the bank specific variables, capital (CAP), bank size (SIZE), loan (LOAN), fixed deposit (FIXD), non interest income (NII), non interest expense (NIE) and credit risk (CR) shows significant impact on Ethiopian commercial banks profitability. Market

concentration and real GDP growth of the country are also significant determinants of Ethiopian commercial banks profitability. The above significant profitability determinants are individually discussed in the next paragraphs referring regression result of table 5, 6, 7, 8, 9 and 10.

Capital (CAP). The first bank specific variable of the study is equity capital. Most theories argue that banks generally have an optimal capitalization ratio and they needs to remain well capitalized to have an optimal profit. Berger (1995), Samy B. Naceur (2003), Athanasoglou *et al.* (2005), and Indranarain Ramlall (2009) find a positive relationship between banks profitability and capitalization. Consistent with these evidences, this study also confirms a positive relationship between banks capital and profitability. 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.

Bank size (SIZE). With regard to bank size (SIZE), in most literatures, the effect of size on banks profitability is positive. Indranarain R. (2009) indicated that larger banks are better placed than smaller banks in harnessing economies of scale in transactions and enjoy a higher level of profits. In developing economies the impact of bank size on profitability is positive because it makes large banks capable of providing extended banking service for large number of customers. The data of this study shows the size of all Ethiopian commercial banks which is measured by log of total asset is increased for the last 10 years. Consequently, this improvement leads to the profitability of banks in

Ethiopia. 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.

Loan and advances (LOAN). As for the loan-to-total assets ratio (LOAN), interest income from loans and advances are the major source of revenue for commercial banks. As indicated in the previous chapters, the more the deposit that are transformed in to loans, the higher the profitability of banks due to interest rate on loans are much higher than interest expense on deposits. Therefore, the loans to total asset ratio of the sample banks during the studied period shows positive and highly significant impact on profitability.

Deposits. Regarding the impact of deposits on profitability, even though it 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. This study finds a negative and significant impact of fixed deposit (FIXD) on Ethiopian banks profitability. This may be because it incurs a higher interest expense on banks than other deposits. On the other hand, the impact of saving deposit (SAVED) on banks profitability is unstable and insignificant. This is because banks could transfer saving deposit in to loans and get higher income than what they paid on interest expenses.

Non Interest Income (NII). The other significant bank specific variable of the study is non interest income (NII). Banking theories said income from fee based activities has negative impact on banks profitability on the ground that when banks shift from interest earning services to non-interest income services profitability may decline. Most studies especially in the developed economies like Vong and Hoi Si Chan (2008) find a negative

relationship between NII and banks profitability. However, this study finds a positive and highly significant impact of NII on Ethiopian commercial banks profitability. This could be attributable to the fact that Ethiopian banking sector is an emerging and unsaturated sector which strive for a better coverage and service diversification. Therefore, instead of shifting attention from one area (loan) to another area of focus (fee based services); the sector is extending its services in both directions. It is the main reason to have a positive and significant impact of both loans and NII on Ethiopian banks profitability.

Non Interest Expense (NIE). As indicated in table 6 it has a negative and significant impact on Ethiopian banks profitability when the regression is made by using only bank specific factors. Noninterest expense items such as salary and administration expense of Ethiopian commercial banks has been increased throughout the studied period. Therefore, this expansion negatively and significantly challenges the profitability of Ethiopian commercial banks.

Credit Risk (CR). The last significant bank specific factor of Ethiopian commercial banks profitability is credit risk (CR) which is measured by the ratio of loan loss provisions to total loans and advances. Most literatures suggest that increased exposure to credit risk is obviously associated with decreased firm profitability. Consistent with those literatures, the study also find a negative and strongly significant impact of credit risk on banks profitability. To curb the impact of credit risk results Ethiopian commercial banks should strive to improve their inspection techniques of identifying potential borrowers because the existing credit risk trend may brought a series collapse against the sector as well as the nation economy.

Market Concentration (CONS). It is the only sector specific variable of the study. Theories on market concentration argue that if the size and firm distribution of a specific sector is concentrated, the profitability of firms becomes high because they could get monopoly power to set the price of their products/service and determine their desired level of profit. During the sample period (2001 - 2010), the concentration of Ethiopian commercial banks that is measured by Herfindahl-Hirschman Index (HHI) has been declined. Hence, this decline on market concentration makes Ethiopian banks to lose their absolute monopoly power on pricing of their services and enjoy the new era of competition. Therefore, consistent with the theory discussed above, the study finds a negative and significant relationship between the declining market concentration and Ethiopian commercial banks profitability.

Macroeconomic Determinants. With regard to macroeconomic factors, the only significant factor of profitability is real GDP growth. As discussed in the methodology part there is a clear anticipation to have a positive relationship between the current Ethiopian stimulated economic growth and banks profitability. The study also justified a positive and significant impact of Ethiopia real GDP growth and banks profitability. This is because, as discussed in the methodology part, stimulated economy could create a new and potential demand for financial services.

Regarding inflation (INF) empirical studies suggest that if a bank's income rises more rapidly than its costs, inflation is expected to exert a positive effect on profitability. The study also shows a positive relationship between inflation and banks profitability but the result is insignificant. Finally, lending interest rate (INT) which is regularly set by

national bank of Ethiopia has a positive but insignificant impact on Ethiopian banks profitability. The study have used lending interest rate instead of saving interest rate because it has been more fluctuated and relatively significant factor than lending interest rate during the studied period.

Finally, as given in the introduction part of the study, there were three hypothesis developed from banking area theories and empirical studies. The first hypothesis said that bank specific determinants such as capital, loans and advances, credit risk and non interest expense determinants significantly affect bank profitability. This hypothesis is accepted by the study because all specified determinants are significant factors of Ethiopian banks profitability. In addition to the above factors, other bank specific factors also significantly affect Ethiopian banks profitability such as bank size, fixed deposit, and non interest income.

The second hypothesis was the amount of loan issued and economic growth has a positive impact on banks profitability. It is also accepted by the study since the regression result which is reported in the previous regression tables justified their positive significance. It is obvious to expect and justify a positive relationship between the size of loan and banks profitability since the major sources of income for commercial banks is interest on loans and advances. In addition, as expressed in the previous paragraph, it is easy to rationalize the positive relationship between the current stimulated economic growth of the country and commercial banks profitability.

The third hypotheses expect credit risk, non interest income and non interest expense to have a negative relationship with banks profitability. Hypothesis as to the negative

relationship between credit risk and profitability as well as non interest expense and profitability is accepted by the study because both credit risk (CR) and non interest expense (NIE) variables negatively and significantly impact Ethiopian commercial banks profitability. However, hypothesis that expects a negative relationship between non interest income and commercial banks profitability is rejected because, in Ethiopia banking sector, non interest income has positive and strongly significant impact on profitability. (see the previous 6 regression result tables).

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

It is generally agreed that a 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, it is important to identify the determinants that mostly influence the overall performance and profitability of commercial banks. For that matter, the study specified an empirical framework to investigate the effect of bank-specific, industry-specific and macroeconomic determinants of Ethiopian commercial banks profitability during the last 10 years. The study also used an appropriate econometric methodology for the estimation of variables coefficient under fixed and dynamic effect regression models. The following sections discussed about the final concluding remarks of the study and possible recommendations.

5.1 CONCLUSION

- As indicated in table 5 and 8 of regression results, bank specific determinants are able to explain a substantial part of banks profitability in Ethiopia (R- square of 71% and 73% respectively).
- Regarding equity capital, the coefficient of capital is positive and significant at 1% significant level when the estimation is made by using only bank specific variables (table 5 and 8). Such result may indicate Ethiopian banks that increase their equity have a lower cost of capital and thus are more profitable. Consistent with this study Samy B. Naceur (2003), Athanasoglou *et al.* (2005), and Indranarain Ramlall (2009) also confirms a positive relationship between banks

capital and profitability. A policy implication of such results may be for National Bank of Ethiopia to sanction higher capital requirements to improve the profitability of banks in Ethiopia.

- Bank size, loan, and non interest income of Ethiopian commercial banks are also positive and highly significant factors of profitability (table 5-10). Hence, banks should strive to have strong investment position, high amount of loan and extending their level of fee based activities in order to be more profitable in the sector.
- On the other hand, credit risk is the main significant factor which challenges the profitability of banks in Ethiopia. In order to resist the credit risk challenges banks should improve the quality of loans they provide through installing better assessment methods of potential borrowers.
- Fixed deposit and non interest expense are also the major causes that hinder Ethiopian banks profitability. Hence, Ethiopian commercial banks required to effectively utilize the high cost fixed deposits and properly manage the level of non interest expenses such as salary and administration expenses.
- Concerning market concentration, the regression result indicates a negative and highly significant impact on Ethiopian banks profitability. The concentration of Ethiopian banking sector which is measured by HH index declined for the last 10 years. Obviously, this leads to a better competition in the market and erodes the price making power of a single bank (Commercial Bank of Ethiopia) and reduces the sector profitability.

- Finally, with regard to the macroeconomic indicates, the only significant factor of profitability is real GDP growth. According to the regression result, the current real economic growth of the country makes commercial banks to be more profitable. Contrary, inflation rate and lending interest rate played insignificant role in Ethiopian commercial banks profitability.

Generally, the study find that all bank specific factors (with the exception of saving deposit), market concentration, as well as economic (GDP) growth significantly affect Ethiopian commercial banks profitability for the last 10 years.

5.2 RECOMMENDATION

Based on the above findings the researcher forwards the following possible recommendations. Ethiopian commercial Banks should strive to improve their equity capital investment and their size. Since loan and fee based activities are the main source of revenue, they should improve the level of those activities. On the other hand, in order to resist the challenges of credit risk, fixed deposit and non interest expense items on profitability, Ethiopian commercial banks should improve the quality of loans, effectively utilize funds from fixed deposit, and properly manage the level of non interest expenses as salary and administration expenses. Finally, that this study is duly designed to test the impact of bank specific (only financial statement variables), market concentration, and macroeconomic determinants on banks profitability. Therefore, the researcher would like to recommend future researchers to include and measure the impact of non- financial determining factors of banks profitability such as management quality, efficiency and productivity, bank age, and number of bank branches.

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APPENDIX

Table 11. Macroeconomic and Market Concentration Figures

Year	Real GDP (Mil)	Real GDP Growth	Saving Int. Rate	Lending Int .rate	Inflation rate	Market concentration
2001	72,181	0.083	0.06	0.12	-0.003	0.0703
2002	73,274	0.0151	0.06	0.1275	-0.106	0.6584
2003	71,691	-0.0216	0.03	0.1075	0.109	0.6106
2004	81,421	0.1357	0.03	0.1075	0.073	0.5759
2005	91,044	0.1182	0.03	0.1075	0.061	0.55
2006	100,908	0.1083	0,03	0.1075	0.106	0.4921
2007	112,468	0.1146	0.03	0.1075	0.158	0.4677
2008	124,602	0.1079	0.03	0.1075	0.253	0.4373
2009	135557	0.0879	0.04	0.115	0.364	0.4121
2010	1052,405	0.1243	0.02	0.1225	0.028	0.04226

Table 12. Summery of Fixed Effect Regression Results

Variable	(1)	(2)	(3)
CONSTANT	-0.132485	0.009070	0.005175
	(0.028855)	(0.047868)	(0.061055)
CAP	(0.086330)***	0.035268	0.037693
	(0.022943)	(0.025485)	(0.025004)
SIZE	0.01220***	0.001509	0.000840
	(0.002376)	(0.003498)	(0.003576)
LOAN	(0.073260) ***	0.055683***	0.053177***
	(0.012040)	(0.012098)	(0.014010)
SAVED	-0.004187	0.012360	0.011071
	(0.016397)	(0.015738)	(0.015875)
NII	0.041672***	0.028250***	0.029338***
	(0.009266)	(0.009299)	(0.010586)
FIXED	-0.014094	-0.041613**	-0.039948**
	(0.019334)	(0.019347)	(0.019379)
NIE	-0.184689**	-0.106593	-0.127836
	(0.070155)	(0.067974)	(0.078940)
CR	-0.272342***	-0.243062***	-0.209366***
	(0.046876)	(0.0043756)	(0.045773)
CONS		-0.045858***	-0.037426**
		(0.012925)	(0.018026)
GDP			0.042578*
			(0.018290)
INF			0.000314
			(0.009880)
INT			0.020811
			(0.148869)
R-squared	0.714385	0.763918	0.787711
Ad. R-squared	0.676928	0.728506	0.743018
F-statistics	19.07180	21.57216	17.32513
Prob(F-stat)	0.000000	0.000000	0.000000
DW stat	1.395218	1.692802	1.723373
No. of observation	70	70	70

*Notes: the regression is based on fixed effect regression model and is estimated using OLS estimation pooling bank level date across seven Ethiopia commercial banks for the periods 2001-2010. *, **and *** denoted significance levels of 10, 5 and 1 percent respectively. Standard errors are given in parenthesis ().*

Table 13. Summery of Dynamic Effect Regression Results

Variable	(1)	(2)	(3)
CONSTANT	-0.144395	0.054448	0.077330
	(0.043778`)	(0.047868)	(0.061055)
LARGO	0.114601	0.001417	-0.024802
	(0.100280)	(0.097033)	(0.098082)
CAP	0.095335***	0.022456	0.020738
	(0.033487)	(0.037095)	(0.037901)
SIZE	0.011573***	-0.002151	-0.003780
	(0.003725)	(0.005227)	(0.005449)
LOAN	0.067721***	0.052645***	0.049806S
	(0.013283)	(0.012862)	(0.016131)
SAVED	-0.012655	0.007606	0.10841
	(0.018634)	(0.017957)	(0.017899)
NII	0.048088***	0.036429***	0.034802***
	(0.010224)	(0.009905)	(0.011694)
FIXED	0.004529	-0103770	-0.044409S
	(0.023907)	(0.024985)	(0.024769)
NIE	-0.237690**	-0.271563***	-0.282897***
	(0.104752)	(0.095898)	(0.107332)
CR	-0.226447***	-0.205379***	-0.179977***
	(0.051376)	(0.047183)	(0.08834)
CONS		-0.061917***	-0.067200**
		(0.017943)	(0.029315)
GDP			0.030418
			(0.023613)
INF			-0.008149
			(0.012846)
INT			-0.012619
			(0.183357)
R-squared	0.730073	0.780369	0.801186
Ad. R-squared	0.684236	0.738132	0.748440
F-statistics	15.92770	18.47609	15.18938
Prob(F-stat)	0.000000	0.000000	0.000000
DW stat	1.485913	1.620155	1.545452
No. of observation	63	63	63

*Notes: the regression is based on dynamic effect regression model and is estimated using OLS estimation pooling bank level date across seven Ethiopia commercial banks for the periods 2001-2010. *, **and *** denoted significance levels of 10, 5 and 1 percent respectively. Standard errors are given in parenthesis ().*