

Determinants of Commercial Banks Profitability in Ethiopia

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This is to certify that the thesis prepared by Mulugeta Melesse, entitled: Determinants of Commercial Banks Profitability in Ethiopia and submitted in Partial Fulfillment of the Requirement for Master of Marketing Management complies with the regulation of the University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

The study examined the effect of internal (bank-specific) and external (industry-specific and macroeconomic) determinants of Ethiopian commercial banks profitability by using panel data of eight commercial banks from the period 2000 – 2013. The study used quantitative research approach and the secondary data collected from the banks' financial statements is analyzed by using Ordinary Least Square (OLS) estimation method of multiple linear regressions models to measure the effect of internal and external determinants on profitability of banks. Return on Asset (ROA) and Return on Equity (ROE) are used as banks' profitability measurement variables of the study.

The output of the study has shown that bank size significantly and positively affects the bank's profitability. However, credit risk, deposit liability and operational efficiency affect the bank's profitability significantly and negatively as expected. Moreover, the macroeconomic determinant of GDP has positive and significant effect on return on assets while it is positive but insignificant in Return on Equity.

Regarding the ownership of banks, the output of the study has revealed that operational efficiency and bank size are significant in explaining profitability of both State and privately owned banks. On the other hand, credit risk is found to affect the profitability of private banks significantly.

Key words: Profitability, Commercial banks

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List of Acronyms/Abbreviations

BJ	Bera-Jarque
CAMEL	Capital adequacy, Asset quality, Management quality, Earning quality, Liquidity
CADEQ	Capital Adequacy
CLRM	Classical Linear Regression Model
DW	Durbin-Watson
GDP	Gross Domestic Product
INF	Rate of Inflation
LNTA	Natural logarithm of total asset
LAS	Total Loan to Total Assets
LIQ	Liquidity
NBE	National Bank of Ethiopia
NITAS	Non Interest Income to Total Assets
OE	Operational Efficiency
TDS	Total Deposits to Total Assets

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The Banking sector is an engine of modern trade and economic development by providing them with a major source of finance. Bank performance has been one of the main concerns of management experts, investors, and economic analysts. This concern closely relates to the significant impact of the profitability of financial organizations in general, and commercial banks in particular, on the potential growth of the economy as a whole. (Hussain and Bhatti, 2010).

Commercial banks play a vital role in the economic resource allocation of countries (Ongore, 2013). They channel funds from depositors to investors continuously. They can do so, if they generate necessary income to cover their operational cost they incur in the due course. In other words for sustainable intermediation function, banks need to be profitable. Beyond the intermediation function, the financial performance of banks has critical implications for economic growth of countries. Good financial performance rewards the shareholders for their investment. This, in turn, encourages additional investment and brings about economic growth. On the other hand, poor banking performance can lead to banking failure and crisis which have negative repercussions on the economic growth (Vincent, 2013)

In the last two decades studies have shown that commercial banks in Sub-Saharan Africa (SSA) are more profitable than the rest of the world with an average Return on Assets (ROA) of 2 percent (Flamini et al., 2009). One of the major reasons behind high return in the region was investment in risky ventures. The other possible reason for the high profitability in commercial banking business in SSA is the existence of huge gap between the demand for bank service and the supply thereof. That means, in SSA the number of

banks are few compared to the demand for the services; as a result there is less competition and banks charge high interest rates. This is especially true in East Africa where the few government owned banks take the lion's share of the market (Evans, 2014)

The performance of commercial banks can be affected by internal and external factors. These factors can be classified into bank specific (internal) and macroeconomic variables. The internal factors are individual bank characteristics which affect the bank's performance.

These factors are basically influenced by the internal decisions of management and board. The external factors are sector wide or country wide factors which are beyond the control of the company and affect the profitability of banks. The internal determinants include bank specific financial ratios representing capital adequacy, cost efficiency, liquidity, asset quality, and size. Economic growth, inflation, market interest rates and ownership are external determinants that affect bank profitability. (Flamini, C., Valentina C., McDonald, G., Liliana, S., 2009)

Economies that have a profitable banking sector are better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou, Brissimis and Delis, 2005). Therefore, it is important to understand the determinants of banking sector profitability. As macroeconomic, and legal environment changes, determinants of profitability banking sector might change as well.

As such, an understanding of determinants of their profitability and the drivers of bank profitability for that matter is essential and crucial to the stability of the economy. However, substantial amount of studies have not been conducted to investigate the status of bank profitability as well as the determinants of profitability of the Ethiopian banking system.

1.2. STATEMENT OF THE PROBLEM

Bank profitability has always attracted the interest of academics, economists, and policymakers. With increasing regulation on the horizon throughout the global financial system however, an understanding of what drives bank profits is increasingly vital.

Many researchers have conducted numerous studies about the profitability of commercial banks and their determinants. They have found that there existed a direct association between profitability of commercial banks and their internal and external determinants (Rajan & Zingales, 1998)

According to Flamini et al., (2009), though a lot of researches have been conducted on the issue of determinants bank profitability, the determinants of profitability have been debated for many years and still unsolved issues in the corporate finance literature. Indeed what makes the profit determinants debatable is the determinants of profit are dynamic from time to time and differ each other by economic systems, financial systems, political systems and operating environments. Thus, there are no universally accepted findings about the determinants of profitability of the banking sector worldwide.

In Ethiopia, banks are the dominant financial institutions and thus their health condition is crucial as it will affect the general health of the economy. Therefore, having the knowledge on factors influencing commercial banks' profitability is not only important but is also essential in stabilizing the economy as well as for the benefits of other parties involved such as the government, financial authorities and other stakeholders.

The banking sector in Ethiopia is highly lucrative and all banks in the country are enjoying supernormal profits. Even though the NBE's directive which compels private banks to purchase NBE bills equivalent to 27 percent of any new loan disbursements at a low-interest earning of 3 percent and a maturity of 5 years was issued in April 2011, the profits of these banks has not shown a decline. One of the reasons may be restriction of the involvement of foreign banks in the country (Tesfaye, 2014).

Though, few studies have been conducted on financial performance of Ethiopian commercial banks, Ethiopian banking sector is not sufficiently studied.

The determinants of profitability of Ethiopian commercial banks as examined by Belayneh (2011) by employing the variables like; capital, bank size, loan and advance, saving deposit, fixed deposit, non interest income, non- interest expenses and credit risk as bank-specific; market concentration as industry – specific variable and economic growth, saving interest rate and inflation as macroeconomic variable.

Berihun (2012) has also examined the effect of bank-specific, industry-specific and macroeconomic determinants of Ethiopian commercial banking industry profitability from the period 2000 – 2011 by using OLS estimation method to measure the effect of internal and external determinants on profitability in terms of average return on asset and net interest margin.

Recent data also testifies that mostly, the banking sector has experienced a trend of growing profitability alongside positive trends related to balance sheet expansion (NBE Report 2011/12). However, the contributing factors, whether internal or external, to the greatest profitability earned by the industry was not well analyzed.

Since substantial amount of studies have not been conducted to investigate the status of bank profitability as well as the determinants of profitability of the Ethiopian banking system, this research will add up something relevant on the effects of bank-specific, industry-specific and microeconomic determinants on profitability of Ethiopian commercial banks industry from the period 2000-2013.

1.3. OBJECTIVES OF THE STUDY

1.3.1. GENERAL OBJECTIVE

The general objective of the thesis proposal was to find out the main drivers of commercial banks profitability in Ethiopia. In other words, the objective is to evaluate the impact of bank specific characteristics, industry specific and macro-economic factors on the profitability of commercial banks in Ethiopia.

1.3.2. SPECIFIC OBJECTIVES

- 1 To investigate and analyze the extent of bank-specific (internal) determinants effect on profitability of Ethiopian commercial banking industry.
2. To check the effects of external (both industry-specific and macroeconomic) determinants on profitability of Ethiopian commercial banks.
3. To know the significant determinants of profitability across the state owned and private commercial banks

1.4. RESEARCH HYPOTHESIS

The following research hypothesis were hypothesized

- ✓ Hypotheses 1: Bank size and Bank profitability are positively correlated
- ✓ Hypotheses 2: Liquidity and Profitability of banks are positively correlated
- ✓ Hypotheses 3: Profitability is positively correlated with Capital Adequacy of banks
- ✓ Hypotheses 4: Asset Quality of the bank has a positive relationship with Profitability of the bank.
- ✓ Hypotheses 5: there is a positive relationship between Operational Efficiency and banks Profitability
- ✓ Hypotheses 6: real GDP growth is positively correlated with the profitability of banks.

1.5. SIGNIFICANCE OF THE STUDY

- It will provide a roadmap for managers and the shareholders to evaluate their bank performance in term of profitability with respect to the internal and external determinants

- It will give direction for economic policy makers to measure the impact of the banking industry's performance on the economy and its implications on the issues of policy
- It will help research beginners who are interested to conduct their research in this area.

1.6. SCOPE AND LIMITATIONS OF THE STUDY

There are 19 licensed commercial banks (both public and private) that are operating in Ethiopia. But to make the study more manageable, the researcher has selected eight banks by taking into consideration the length of years that the banks are in operation. The study covers the operational period of banks which ranges from the year 2000-2013. Moreover, the research is concentrated on the bank-specific, industry-specific and macroeconomic measurable determinants only. In addition to this the study measures more of financial performance of the banks.

The study was limited in scope to study-the impact of internal and external factors that affect the profitability of commercial banks which includes bank size, credit risk, operational efficiency, capital adequacy, liquidity, non interest income to total assets, deposit to total assets, asset quality, GDP, and inflation. It is acknowledged that there are other factors that may impact on profitability of banks but not included in this study

1.7. Organization of the Study

The study comprises of five chapters; chapter one includes introduction of the study, Chapter two presented empirical and theoretical review of the literature related to the issue of determinants of bank profitability; Chapter three includes research design and methodology that are employed in the study; Chapter four incorporates the results and discussions; and finally summary, conclusion and recommendations of the study are included in Chapter five.

CHAPTER TWO

LITERATURE REVIEW

Various determinants influence banks' profitability, recognizing the main concepts of the banking sector profitability and its determinants are essential in order to provide evidence to support the practical result by the theoretical and empirical view. Hence, this chapter serves as a base for this study by describing factors that could influence banks' profitability

2.1. THEORETICAL FRAMEWORK

Several factors influence banks' operations and banks' profitability, recognizing and understanding the underlying concepts and definitions of the banking sector is essential in order to vouch results and analyses. There is no general theory of profitability that provides a unifying framework for the study of financial performance determinant of the commercial banking industry (Flamini et al., 2009). The investigation of bank performance determinants has been conducted in the context of different theories among them the commonly used are Structure-Conduct-Performance (SCP) paradigm and Efficient-Structure theory.

2.1.1 The Structure Conduct Performance (SCP) Model

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

only fails to recognize that performance can impact on structure and conduct while structure can impact on both performance and conducts. The Structure Conduct Performance (SCP) model therefore asserts that factors external to the organizations such as market conditions are primarily and indirectly, the determinants of profitability.

The main idea in this theory is that market “structure” (i.e., concentration level of the market) through “conduct” link determines the “performance” (profitability) of firm. Put it differently, markets with high concentration level induces firm to behave (“conduct”) in a collusive way. As a result, “performance” of the firms grows up. (Goddard, 2004)

Mason (1939) and Bain (1951) were the earliest to suggest that profit of firms are determined by concentration level of the market. They demonstrated that profits of firms operating in highly concentrated industries are significantly higher than that of firms operating in industries with lower concentration. The Structure Conduct Performance (SCP) paradigm presupposes that a higher banking industry concentration permits the collusion of banks to set higher prices and consequently gain substantial profits (Mason, (1939); Bain (1951); Heggested (1977); Clark (1986); Samad (2008); Farooq (2003).

2.1.2 Efficiency Hypothesis

A theoretical attempt to offer an alternative explanation on the market Structure Conduct Performance (SCP) relationship was first made by Demsetz (1973) who also proposed the Efficiency hypothesis. He stated that higher profits of banks are not due to their collusive behavior but because of high efficiency level, which in turn, leads to larger market shares that banks possess. In other words, profitability of bank is determined not by the market concentration but by bank efficiency (Grygorenko, 2009).

This hypothesis stipulates that a bank which operates more efficiently than its competitors gains higher profits resulting from low operational costs. The same bank holds an important share of the market. Consequently, differences at the level of efficiency create an unequal distribution of positions within the market and an intense concentration (Mensi *et al.*, 2010).

Smirlock (1985) performed empirical examination of the Efficiency Hypothesis where he considered market share as a proxy to efficiency. In his empirical study of 2700 banks, Smirlock (1985) was able to demonstrate that there was no association between market concentration and bank profitability while significant relationship between bank profitability and market share was present. Thus by his work, the Structure-Conduct-Performance model was invalidated. However, Rhoades (1985) doubted the conclusion that the positive relation between market share and profitability was due to efficiency. He stated that this pattern might occur because of product diversification and correspondingly, ability of some banks to set higher prices on their services.

According to Grygorenko (2009), further empirical investigations did not bring clarification to the issue as to which of the theories mentioned above is best in explaining bank profitability: Ahmad *et al.* (1998) and Yu *et al.*, (2005) confirmed Structure-Conduct-Performance theory, while Mamatzakis *et al.*, (2003) and Naceur (2003) found evidence for Efficient-Structure hypothesis.

One of the earliest empirical tests of validity Structure-Conduct-Performance paradigm for banking market was performed by Kaufman (1966). In his research of Iowa banking market for 1959-1960 periods the author found statistically significant positive but not strong relationship between concentration level of the market and performance of banks operating at this market. Also based on his empirical results, he suggested that relationship between market concentration and bank profitability is of non-linear form.

Shortly after, a number of empirical works related to testing Structure-Conduct-Performance hypothesis for banking market appeared. Rhoades (1982) made a complete survey of all these studies released before 1982. In total, 53 out of 65 empirical tests were found to confirm the theory about existence of positive relationship between market concentration and bank profitability.

A theoretical attempt to explain this “weakness” was provided by Demsetz (1973). He stated that higher profits of banks are not due to their collusive behavior but because of high efficiency level, which, in turn, leads to larger market shares that banks possess. In

other words, profitability of bank is determined not by the market concentration but by bank efficiency. Market share of the bank is assumed to be a measure of efficiency here.

Empirical examination of this hypothesis (“Efficient-Structure” theory) was performed by Smirlock (1985). Using data set over 2700 banks, he found no relationship between market concentration and bank profitability, while significant positive correlation between bank profitability and market share was present. Therefore, according to this empirical work, Structure-Conduct-Performance paradigm was considered to be wrong. However, Rhoades (1985) doubted that positive relationship between market share and profits is due to bank efficiency. He stated that this pattern might occur because of product diversification and, correspondingly, ability of some banks to set higher prices on their services.

Further empirical investigations did not bring clarification to the issue which of the mentioned above theories is best in explaining bank profitability: Ahmad et al. (1998) and Yu et al. (2005) confirmed Structure-Conduct-Performance theory, while Mamatzakis et al. (2003) and Naceur (2003) found evidence for Efficient-Structure hypothesis.

In the theories described above profitability of the bank is taken as a proxy for performance. There are alternative theories, in which factors other than profitability are taken as a measure of performance. Expense-Preference behavior theory is one of the most employed in the research. In this theory it is proposed that the main goal which managers pursue is to maximize not profit but own utility or utility of the firm, which is usually achieved via increasing salaries or other staff expenses (Williamson, 1963).

Listed above Structure-Conduct-Performance, and Efficient-Structure, hypothesis are the theories that most widely used in the empirical works dedicated to bank performance investigation. Doing research in the framework of mentioned theories many of the authors do not restrict themselves to employing only market share and concentration ratio as the possible explanatory variables of bank performance. Capitalization level, service diversification, lagged profitability, macro variables (inflation, GDP per capita growth)

are the most commonly employed factors in empirical research which may explain bank performance

2.2. EMPIRICAL LITERATURE

Numerous empirical studies were conducted to identify the determinants of bank profitability in many countries. In recent literature, the determinant of bank profitability is defined as a function of internal and external determinants. Internal determinants are related to bank management and termed micro or bank specific determinants of profitability (Gungor, 2007). The external determinants are reflecting economic and legal environment that affects the operation and performance of banks. According to the nature and purpose of each study, different variables could be used. Among the internal determinants, there are bank specific financial ratios representing capital adequacy, cost efficiency, liquidity, asset quality, and size. Economic growth, inflation, market interest rates and ownership are external determinants that affect bank profitability.

According to the study by Kaya (2002) on the determinants of banks profitability in Turkey, equity to assets affects ROA ratio positively while affecting ROE negatively. Furthermore, real interest rate, ratio of securities to total assets, share of the bank in total assets of the sector and open foreign currency position have positive impact on ROE while budget deficit of the public sector and ratios of credits and liquid assets to total assets affect both ROA and ROE positively. On the other hand, net non-performing loans affects ROA negatively while ratios of staff expenditures and deposits to total assets affect both ROA and ROE negatively.

Kiyota (2009), using data from 2000 to 2007 for 29 Sub-Saharan African countries to analysis efficiency and profitability of communal banks, suggests that the profit efficiency of Non-SSA foreign bank has a negative and statistically significant relationship with three variables such as the return on the average equity, equity to net loans and net loans to total assets during the pre crisis period (2004–2007).

In Tunisia, Naceur and Goaied (2010) studied the determinants of bank performance but focusing on two measures of commercial banks' performance which are interest margin

and profitability for the period of 1980- 2000. Two macroeconomic variables were used which includes inflation and GDP per capita growth. By combining three empirical models (fixed, random, and random coefficient model) it was discovered that inflation is positively associated with net interest margin of the banks while GDP per capita growth on the other hand, did not have any significant impact with bank performance.

Fadzlan (2011) studied the influence of bank's internal factors and macroeconomic indicators on the Korean banks' profitability during 1992 to 2003. On the basis of regression it was concluded that liquidity has negative impact on profitability banks with lower liquidity level to show higher profitability. Diversification regarding banks' income sources has positive impact on profitability. Credit risk has negative impact. Business cycle particularly inflation shows pro-cyclical impact on bank profitability size has positive impact on the profitability where as there is a negative influence of financial crisis in the Asia on the Korean banks, Korean banks showed more profitability during the period of pre-crisis than the post crisis period.

Alper and Anbar (2011) investigated bank specific and macroeconomic determinants of commercial bank profitability in Turkey over the period of 2002-2010. The study uses both return on asset (ROA) and return on equity (ROE) as proxy for bank profitability. By employing balanced set of panel data and fixed effect model, the result shows that only real interest rate is positively related with profitability in regards to macroeconomic variables. In other words, an increase in real interest rate would lead to an increase in commercial banks' profitability in Turkey.

Gul et al. (2011) examined the profitability of 15 Pakistani commercial banks using bank-specific and macro-economic determinants over the period of 2005-2009. Using Pooled Ordinary Least Squares (POLS), their results prove that the internal (bank size, capital, loan and deposits) and external factors (GDP, inflation and stock market capitalization) have strong influence on the profitability. On the other hand, some insignificant outcomes are also found in the correlation between variables, for example Net Interest Margin (NIM) is negatively correlated to Bank Size, Loan, Deposits and GDP.

Aburime (2008) used a sample of 154 banks with 1255 individual observation on unbalanced panel data over the period 1980-2006 to investigate the macroeconomic determinants of bank profitability in Nigeria. The result revealed that real interest rate, inflation, monetary policy and foreign exchange regime are positively associated with banks' return on assets.

Sufian (2011) examined the impact of bank specific and macroeconomic variables on the performance of Korean banking sector during the pre- and post-Asian financial crisis. A total of 251 bank year observations consisting of 11 commercial banks over the period 1993- 2003 were employed and tested using panel fixed and random effect regression technique. In regards to macroeconomic perspectives, the result shows that inflation has positive association with banks' return on assets.

2.3. Profit Measures and Determinants of Commercial Banks Profitability

A number of studies have examined the determinants of banks' profitability in many countries around the world. Most of the studies consider internal factors (i.e., banks' specific) and external factors (i.e., industry-specific and economic environment) and examine either a particular country or a number of countries. There have been a number of research papers on determinants of profitability of commercial banks. Some of the research papers focused on single country and others too concentrated on panel of countries. Researchers who focused their studies in this area are dividing the determinants of commercial banks performance and profitability into two categories thus, the Internal and the External factors.

2.3.1. Profit Measures of Commercial Banks

Return on assets (ROA) is the ratio of Net Income after Taxes divided by Total Assets. The ROA signifies managerial efficiency, in other words, it depicts how effective and efficient the management of banks has been as they seek to transform assets into earnings. And the higher ratio indicates the higher performance of the banks. It is a useful

tool for comparing profitability of one bank with other or the whole commercial banking system.

Return on Equity(ROE) is said to measure the rate of return on the bank's shareholders equity and it is calculated by dividing banks net income after taxes by total equity capital which includes common and preferred stock, surplus, undivided profits, and capital reserves.

2.3.2. Internal Determinants of Commercial Banks Profitability

According to Husni (2011) the internal determinants of banks profitability are normally consisting of factors that are within the control of commercial banks. They are the factors which affect the revenue and the cost of the banks. Some studies classified them into two categories namely the financial statement variables and non-financial variables. The financial statement variables include factors that are directly related to the bank's balance sheet and income statement. Whiles, the non-financial statement variables include factors like the number of branches of a particular bank, location and size of the bank etc; Haron, Sudan (2004).

2.3.2.1 Income (Non Interest Income to Total Assets)

Rasiah (2010) presented that banks generate income mostly on their assets and the assets could be termed as income and non-income generating. With regards to commercial banks income Rasiah Side (2010) classified it into two, namely interest and non-interest income. The interest income consist of rates charge on loans, overdraft and trade finance which the banks offers to customers. Whereas, the non-interest income is consisting of fees, commissions, brokerage charges and returns on investments in subsidiaries and securities. According to Vong et al (2009), the major source of banks revenue is interest income. It contributes about 80% of commercial banks earnings. The other source of banks revenue includes dividends and gains from dealing in the securities market. There could be also some minor sources of income for instance earnings from trust activities and service charges on deposit accounts.

2.3.2.2. Loan quality (Provisions to Loans to total Loan and advances)

As it has been mentioned above, one of the major roles of banks is to offer loans to borrowers and loans serve as one of the ultimate source of earnings for commercial banks. In other words loans represent one of the highest yielding assets on banks' balances sheet. It is obvious that the more banks offer loans the more it does generate revenue and more profit. However, banks have to be courteous in offering more loans because as they offer more loans to customers they expose themselves to liquidity and default risks which impacts negatively on banks' profits and survival.

Empirical evidence from Suffian et al (2008) on the profit determinants of banks in Philippi reveals that the proportion of loan loss provisions to total loans was statistically significant. As the amount of loan loss provisions indicates the level of credit risk, the results claims that Philippines banks with higher credit risk tend to exhibit lower profitability levels.

Moreover, the study conducted by Vong et al (2009) indicated that the asset quality, as measured by the loan-loss provisions, negatively impacts on the performance of banks in Macao. With regards to the loan to total assets (LOTA), Vong et al (2009) findings revealed that instead of positively affecting profitability, it rather decrease profitability and according to these authors, this result was in confirmation with the initial finding of Vong (2005). According to them the reason is that it is due to stiff competition in the credit market and interbank placement of idle funds in foreign countries. Thus, to measure the quality of loans on the banks' balance sheet Rasiah (2010) suggested the use of non-performing loans as an indicator of the loans quality

According to Flamini et al. (2009) the main source of bank-specific risk is credit risk. Poor enforcement of creditor rights and obligation, weak legal environment, and insufficient information about the borrowers expose banks to high credit risk. At the macroeconomic level, weak economic growth adds to risk as it promotes the deterioration of credit quality, and increases the probability of loan defaults. Higher anticipated non-repayment of the loans, measured by the loan loss provisions, reflects a lower credit quality of the loans. Over a longer period, a lower credit quality could negatively

influence the profitability since the actual impairment costs of non-repayment are likely to be higher for banks with a lower asset quality than for banks with higher asset quality. In contrary to the risk-return hypothesis, a lower asset

2.3.2.3. Deposits Liability (Deposit to Total Assets)

Banks are said to be heavily dependent on the funds mainly provided by the public as deposits to finance the loans being offered to the customers. There is a general notion that deposits are the cheapest sources of funds for banks and the more deposits commercial bank is able accumulates the greater is its capacity to offer more loans and make profits.

Investigation done by Husni (2011) on the determinants commercial banks performance in Jordan disclosed that there is significant positive relationship between ROA and Total liability to total Assets. To capture deposits in the model Anna P. I. Vong et al (2009) presented the effect of deposits (DETA) on profitability as deposits to total assets ratio.

Most studies from the literature agreed that, liability portfolio Management especially deposit liability may influence the profitability of commercial banks positively, among this (Moin, 2008) found. In contrary other researchers conclude that Since, time and savings, deposits represent a relatively higher cost source of funds, the more a commercial bank is committed to time and saving deposit, the higher would be the funding cost and hence the lower the profits (Ommeren, 2011). In the case of Ethiopian commercial banks business environment regarding the impact of deposits on profitability research conducted by (Belayeneh, 2011) concluded that, even though, deposit is the main source of funds for banks, the number one expense item for a banking sector is interest payment on saving and fixed deposits. Because of this study revealed fixed deposit has a negative and significant impact on Ethiopian commercial banks profitability. In addition to this, the result show that the impact of saving deposit on banks profitability is unstable and insignificant

2.3.2.4. Capital ratio (Capital Adequacy)

Devinaga Rasiah (2010) and P. I. Vong et al (2009) included capital ratio (EQTA or CTRA) as a variable in their study of determinants of banks profitability and performance

because capital also serve as a source of funds along with deposits and borrowings. They argue that capital structure which includes shareholders' funds, reserves and retained profit affect the profitability of commercial banks because of its effect on leverage and risk. They documented that, commercial banks assets could be also financed by either capital or debt. But debt financing could be very risky as compared to capital financing with regards to credits and liquidity risks with which commercial banks are expose to. This is because for instance, if a commercial bank experience lost of profit as result of credit default or liquidity problem the bank still has the obligation to services its debt, on the other hand a commercial bank with enough capital is able take higher risk and also absorb shocks which emanate from liquidity and credits risks.

Sufian F. et al (2008) argued that banks in developing countries needs a strong capital structure, because it provides them strength to withstand financial crises and offers depositors a better safety net in times of bankruptcy and distress macroeconomic conditions. And according to Molyneux (1992) banks with high level of equity can reduce their cost of capital and that could impact positively on profitability.

Empirical evidence presented by Karkrah and Ameyaw (2010) on profitability determinants of commercial banks in Ghana revealed that the equity ratio which is the measure of the capital strength of the banks posted a positive relation with the banks ROA. They documented that their finding is in line with the findings of Suffian et al (2008) which reveals positive relation between Philippines banks level of capitalization and profitability.

2.3.2.5. Liquidity Risk

Liquidity risk is another type of risk for banks; when banks hold a lower amount of liquid assets they are more vulnerable to large deposit withdrawals. In other word liquidity risk, arising from the possible inability of a bank to decreases accommodate liabilities or to fund increases on the assets' side of the balance sheet. Following Saunders and Cornett (2008), liquidity risk refers to the risk that an asset cannot convert into cash or that the conversion is costly. Furthermore, they state that price risk refers to the risk that the sale price will be lower than the purchase price of an asset. It is considered an important

determinant of bank profitability Athanasoglou (2006). Therefore, liquidity risk estimated by the ratio of liquid assets to customer deposits and other short term funding. Insufficient liquidity is one of the major reasons of bank failures Ommeren (2011). Liquidity is the quality of an asset that makes it easily convertible into cash with little or no risk of loss.

2.3.2.6. Expense Management

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

2.4. External Determinants of Commercial Banks Profitability

External factors are said to be the factors that are beyond the control of the management of commercial banks. The external determinants of commercial banks profitability are indirect factors, which are uncontrollable, but have an enormous impact on bank's profitability. According to Karkrah and Ameyaw (2010) macroeconomic variables has been a major components of the external profit determinants in most studies. The most external factors that have been presented in most studies includes competition/market share/firm size, inflation, GDP growth, and interest rate; Haron, Sudin (2004).

2.4.1 Gross Domestic Product (GDP)

According to Vong et al (2009), the economic growth, which is measured by the real GDP growth rate (RGDP), was expected to affect banking profitability positively by its inclusion in the profit determinants model. And according to the author there is a perception that loan defaults are normally lower in times of favorable economic growth and vice versa. Besides, higher economic growth may lead to a greater demand for loans which will result in both interest and non-interest incomes hence increase in the profits of commercial banks.

However, empirical studies have revealed a mixed effect on the relationship between economic growth rate and banks profitability. As some studies support the general expectation of positive relation between these two variables others too exhibits a contradictory findings in terms of negative or insignificant relation between the two. Karkrah and Ameyaw (2010) cited that study done by Sufian et al. (2008) on the relationship between macroeconomic and return on assets (ROA) regarding Philippians banks revealed a positive relationship between GDP and banks profitability. According the authors this result was in line with the findings of Kosmidou and Staikouras et al. (2008). Furthermore, the research results of Fotios Pasiouras and Kyriaki Kosmidou (2007) on factors influencing the profitability of domestic and foreign commercial banks in the European Union shows a positive correlation between GDP growth rate and banks profitability.

On the hand, Husni (2011) observations on the Jordanian banking shows a significant and negative relationship between ROA and Annual Growth Rate for Gross domestic product (GDPGR) of the commercial banks in Jordan. Meanwhile, the finding of P. I. Vong et al (2009) also exhibited an insignificant relationship between GDP and commercial banks profitability in Macao and their finding is consistent with the findings of Bennacaur & M. Goaid (2008).

2.4.2 Inflation rate

Revell (1979) indicated that inflation is one of the factors which may cause variations in commercial banks profitability. Devinaga Rasiah (2010) in his study asserted that central banks in their capacity to control inflation increase the cost of borrowing and reduce the credit creating capacity thus the funds being given to the commercial banks as loans. As result of this the cost of borrowing becomes higher and the banks becomes more stringent in their lending policies which will subsequently lead to lower demand for funds and a fall in the volume of spending.

Obviously the advent of such situation may adversely affect the profitability of the commercial banks because banks earn their revenue mostly from the loans they give to the customer so if the demand of loans falls as a result of the higher cost of borrowing then definitely earnings as well will fall hence the profit. Devinaga Rasiah (2010) further stated that inflation impact negatively on commercial banks profitability by decreasing the real value of bank's assets as compared to their liabilities.

This is because commercial banks nominal assets might be larger than their nominal liability due to their nature of being net monetary creditors and because of this in times of high inflation the value of the nominal assets would decrease more relative to the increase in the value of nominal liability. Some empirical evidence seems to support this notion that inflation impact negatively on the profitability of commercial banks. This has been confirmed by the observation of Husni (2011) which revealed a significant and negative relationship between the ROA of Jordanian commercial banks and inflation rate. This finding is in line with the result of Sufian et al. (2008) investigation on profits determinants of commercial banks Philippi.

Devinaga Rasiah (2010), documented that the impact of inflation on banks profitability to large extent depend on banks' ability to anticipate the occurrence of the inflation. This is because if banks are well assured of the possible inflation then interest rate would be increase to offset the imbalance and this would make the real value of the bank's assets and liabilities to stay unchanged and vice versa.

This is in line with the findings of Pasiouras and Kosmidou (2007) which reported that inflation was positively related to profitability of domestic banks in Europe because the levels of inflation were anticipated by domestic banks. This gave them the opportunity to adjust the interest rates accordingly and consequently earned higher profits.

2.4.3 Bank Size

According to Devinaga Rasiah (2010), market share could be included in the profitability model as an external determinant because if commercial banks could be able to expand their market share then they may be able to increase their income as well hence profit. This is because the ability to increase market share requires selling more so in the case of banking if commercial banks are able to for example offer more loans to more customers then they stand a greater chance of increasing interest income as well as profits. Moreover, Smirlock (1985) in his efficient structure hypothesis advocate that commercial banks that are in the position to ensure superior efficiency and having low cost structures stand the chance of achieving supernormal profits.

Furthermore, according to Karkrah and Ameyaw (2010) market share or size of banks is normally used to capture potential economies or diseconomies of scale in the banking sector. Secondly, the size of banks as a variable control for cost differences and product and risk diversification. They argue that the first factor (economies or diseconomies of scale) is expected to lead to a positive relationship between bank size and profitability if there are significant economies of scale. Their Andreas & Gabrielle (2011) investigation revealed a positive relationship between larger and smaller banks and profitability. According to them there was an indication that Larger and smaller banks were more profitable than medium-size banks before the crises. And the reason was that larger banks were benefiting from the offering of large number of products, loan diversification and economies of scale.

Karkrah and Ameyaw (2010) further presented that the second part which has to do with risk diversification could lead to a negative relationship between bank size and profitability. In the sense that, increased diversification may lead to lower credit risks and as a result cause lower returns. There are quite a number of researchers which seems to

support this notion of negative relationship which exists between the bank size and profitability. For example according to Dietrich, Wanzenried (2011) large banks in Switzerland were less profitable than small and medium-sized bank in these years of the financial crisis. And their main reasons for this negative relationship between size and profitability was that larger banks in Switzerland had relatively higher loan loss provisions during the crisis and that larger banks were found to have significantly lower net interest margins in times of turmoil than smaller banks.

To capture the effect of market share or bank size on profitability, Devinaga Rasiah (2010) stressed that as both deposits and loans represent commercial banks output, one has to make a choice between deposits and assets to be use as proxy of banks market share. However, he argued that the fact that assets components may also comprise of investment in securities and subsidiaries with which they might be the same across all commercial banks, the choice of deposits for the measurement of market share is considered to be more impartial. This argument is supported by P. I. Vong et al (2009) who captured market share/bank size in their study by using the total deposits (in logarithms) as proxy for market share (LOGTA).

2.4. Commercial Banking Industry of Ethiopia

According to 2013 annual reports of National Bank of Ethiopia the development progress of banking sector in Ethiopia is reflected in sufficient manner. This development is described in terms of numbers of banks, total assets, human resource utilization etc. The total numbers of commercial banks in term of branches and establishment of new banks are increasing relative to the previous period, but not relative to other developing Africa countries. It is estimated that one bank branch serves 84,210 people, which is below even within the Sub-Saharan standard. This shows Ethiopia indeed is under banked country with limited outreach. In term of new establishment of banks, nowadays the new entrants come to the market, this is flourishing for the development of the banking industry.

Table 2.1 List of commercial banks in Ethiopia

No	Name of Commercial Bank	Establishment Year
1	Commercial Bank of Ethiopia	1963
2	Construction & Business Bank	1975
3	Awash International Bank	1994
4	Dashen Bank	1995
5	Abyssinia Bank	1996
6	Wegagen Bank	1997
7	United Bank	1998
8	Nib International Bank	1999
9	Cooperative Bank of Oromia	2004
10	Lion International Bank	2006
11	Oromia International Bank	2008
12	Zemen Bank	2008
13	Bunna International Bank	2009
14	Birhan International Bank	2009
15	Abay Bank	2010
16	Addis International Bank	2011
17	Enat Bank	2012
18	Debab Global Bank	2012

The commercial banks of Ethiopia operating under highly regulated business environment. This rule and regulations are stated by the National Bank of Ethiopia (NBE). The NBE directives have its own positive and negative role on profitability of the commercial banks. This might be hindering the development of the bank. For instance, among the NBE directives some of which related with this study are stated here Licensing and Supervision of Banking Business directive No. SBB/29/2002(see, <http://www.nbe.gov.et>) under article 4 stated single borrower loan limit like this: “the aggregate loan or extension of credit by a bank to any one borrower, whether a natural person or business organization, shall at no time exceed 25% of the total capital of the bank”. Even if, this directive has the advantage to reducing the non-performing loan, it affecting the loan performance of the commercial banks. So the NBE can set other mechanisms to protecting non-performing loan, rather than limited the borrowing capacity of the borrower.

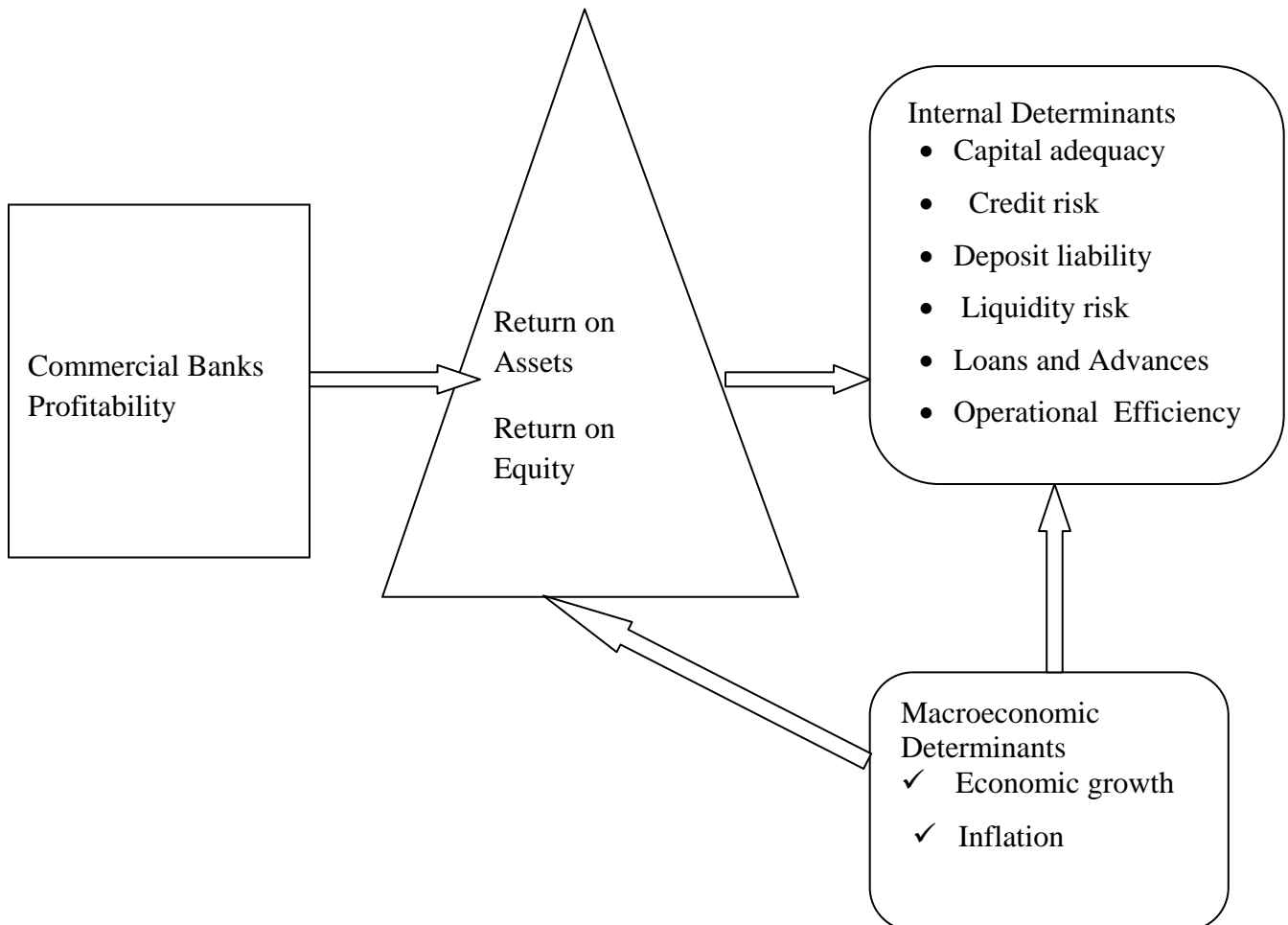
Other important directives which related to the determinants of profitability are Licensing and Supervision of Banking Business Minimum Capital Requirement for Banks

Directives No. SBB/50/2011. This directive under article 4 of these directives stated the Minimum Paid-up Capital of the banks like this:

The minimum paid up capital required to obtain a banking business license shall be Birr 500 million (birr five hundred million), which shall be fully paid in cash and deposited in a bank in the name and to the account of the bank under establishment.

2.5. Conceptual Framework

In this section, the theoretical basis of the relationship between banks' profitability and explanatory bank-specific as well as macroeconomic factors is presented. From the theoretical relationship, the conceptual model that was used to estimation is presented in the following diagram:



CHAPTER THREE

RESEARCH METHDODOLOGY

3.1. Description of the Study Area

Banks are the dominant financial institutions and banking is the highly profitable sector in Ethiopia. There are only state owned and privately owned domestic banks in the country since foreign banks are not allowed to operate inside Ethiopia. There are 18 commercial banks that are licensed and operating in Ethiopia. Among them two of them are state owned (Commercial Bank of Ethiopia and Construction and Business Bank) while the others 16 are privately owned commercial banks. By taking into account size of the banks and their years of experience in operation, eight banks (Commercial Bank of Ethiopia, Construction and Business Bank, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wogagen Bank, United Bank and Nib International Bank) are selected and used as a representative sample for study. The study was mainly focused on finding the determinants of the profitability of commercial Banks in Ethiopia.

3.2. Research Design and Strategy

Quantitative methods of research design were utilized in conducting the study. The researcher tried to explain the relationship between profitability and its' determinants based on the result that were found by regression, because of this, the research design was explanatory and descriptive type.

3.3. Data Type and Source

The sources of data for this research were secondary sources. The secondary data were collected from internal and external sources. The internal sources are the balance sheet and income statement of eight Ethiopian commercial banks which are in operation more than a decade such as Commercial Bank of Ethiopia, Construction and Business Bank, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib Bank

This study is based on balanced panel data of Ethiopian commercial banks. The researcher used annual bank specific, industry specific and macroeconomic data over the period 2000 – 2013 for the analysis. A sample of 8 banks out of 18 banks was examined for 14-year period from 2000 to 2013 yielding 112 bank-year observations.

The Secondary data obtained from published statements of accounts of commercial banks in Ethiopia, National Bank of Ethiopia (NBE), IMF and World Bank publications for 14 years from 2000 to 2013 was used. It uses panel data due to the advantage that it helps to study the behavior of each bank over time and across space (Baltagi, 2005; Gujarati, 2003).

3.4. Instruments of Data Collection

Secondary data were collected from the accounts of commercial banks, National Bank of Ethiopia, website of the private banks, annual reports, financial statements and other published and unpublished documents.

3.5. Sampling Techniques and sample Size

Sampling involves the various procedure uses to select a part to represent a population. Purposive sampling was used in determining the sampled banks in the study taking into account size of the bank and years of experience in operation. The bank selection is done following the historical formation time of banks and in fact with consideration of their ownership structure and asset size.

Among the 18 Ethiopian commercial banks, Eight of them (Commercial Bank of Ethiopia, Construction and Business Bank, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wogagen Bank, United Bank, Nib International Bank) were selected taking into account size of the banks and their years of experience in operation. They were assumed to be representative samples of all other banks in the country.

3.6. Data Analysis Techniques

The collected data was analyzed by using descriptive statistics, correlations, and multiple linear regression analysis. Secondary data was analyzed by using E-views 6 software package.

The collected panel data is regressed by panel fixed effect regression method and interpret with the help of different financial ratios (descriptive statistics) and multiple regression (significant test). The researcher employed statistical tools of e views 6.1 software during analysis of the data since it was convenient for panel data analysis. The proposed hypotheses are tested statistically to arrive at the conclusion and policy implication. In order to calculate the value of the bank-specific determinants the researcher used financial ratio analysis by taking the value of each bank specific variables from the financial reports of each bank and compute the ratio analysis. Regarding the macroeconomic determinants for each period the researcher used directly the data which get from the source.

3.7. Model Specification

A multiple linear regression model has been used to test the relationship between bank profitability and the internal and external determinants. The CAMEL ratios which are the popular bank specific factors are used in representing bank specific factors in relation to performance. The model used in the study is illustrated as follows:

$$\text{PROF} = \beta_1 \text{LNNTA}_{it} + \beta_2 \text{CR}_{it} + \beta_3 \text{OE}_{it} + \beta_4 \text{TDS}_{it} + \beta_5 \text{LAS}_{it} + \beta_6 \text{LIQ}_{it} + \beta_7 \text{CADEQ}_{it} + \beta_7 \text{NITAS}_{it} + \beta_7 \text{GDP}_t + \beta_7 \text{INF}_t + \varepsilon$$

Where

i=individual bank

t= year

β_i are co-efficient of regression

Prof: Profitability measured by ROA & ROE

LNNTA: Asset size (logarithm of total assets)

CR: Credit Risk (total loss provisions to total loans)

OE: Operating efficiency (total operating expenses to net interest income)

TDS: Total deposits to total assets

LAS: Total loan to total assets

LIQ: Liquidity (Liquid Assets to Total Deposits)

CADEQ: Capital Adequacy (Capital & Reserves to Total Assets)

NITAS: Non Interest Income to Total Assets

GDP: Annual real GDP growth rate

INF: Annual Inflation rate

Variables

The variables under study can be classified into independent (explanatory) and dependent (explained).

Dependent Variable

- ✓ **Return on assets (ROA):** bank profitability is best measured by ROA. ROA is better measure of profitability because it cannot be distorted by high equity multiplier. ROA in actual sense signifies managerial efficiency, in other words it depicts how effective and efficient the management of banks has been as they seek to transform assets into earnings. The ROA is defined as net income divided by total assets. ROA shows how efficiently assets are managed by the banks to generate profits. ROA is calculated as net profit divided by total assets.
- ✓ **Return on Equity (ROE)** said to measure the rate of return on the bank's shareholders equity and it is calculated by dividing banks net income after taxes by total equity capital which includes common and preferred stock, surplus, undivided profits, and capital reserves.

Independent Variables

- ✓ **Asset size (LNTA):** Total assets of the banks are used to represent the bank size by taking natural logarithm of total asset.
- ✓ **Credit Risk (CR):** CR is calculated as total loss provision divided by total loans. Theory suggests that increase in credit risk is associated with the decrease in profitability.
- ✓ **Total Deposits to Total Assets (TD/TA):** The Deposits are an important source for banks funding. Increase in the deposits transformation into loans also increases the interest margin and profit.

Control Variables

There are some other bank specific and macroeconomic factors which can somewhat impact on the profitability of banks. Hence, we have included the following control variables in the study:

- ✓ ***Operating efficiency (OE)***: It is calculated as total operating expenses divided by net interest income.
- ✓ ***Total loan to Total Assets (TL/TA)***: It measures the source of income for banks.
- ✓ ***GDP growth rate (GDP)***: It measures the growth in the economic activities after adjustment of inflation.
- ✓ ***Inflation rate (INF)***: It measures the increase in the overall percentage in Consumer Price Index (CPI) for all goods and services.

CHAPTER FOUR

EMPIRICAL RESULTS AND DISCUSSION

This chapter analysis the determinants of commercial banks profitability, using the annual 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 2000 up to 2013 and a cross section segment which considered eight Ethiopian commercial Banks. The banks included in the study are Commercial Bank of Ethiopia, Construction and Business Bank, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wogagen Bank, United Bank and Nib International Bank. Prior to conducting the regression of the bank profitability determinants, it is essential to test the appropriateness of the panel data (both time - series and cross – section data) based on certain criteria and assumption of OLS diagnostic test.

4.1 Model Specification Test

To test the relationship between these commercial banks profitability (return on asset and return on equity) and identified profitability determinants, the theoretical model is developed based on the finance theory from the methodological part of this study. There are broadly two classes of panel data estimator approaches that can be employed in empirical research: fixed effects models and random effects models. The important issue is to investigate about the panel model whether it is fixed effects or random effects model. This also requires the high concern when the researcher employed the panel data approaches.

Therefore; Hausman test was conducted to choose between fixed effects (FE) and a random effects (RE) model. According to this test null hypothesis says that random effects model is appropriate than the fixed effects model (Brooks, 2008, p.509). As indicated by the Hausman test (see Table 4.1. below), the difference in coefficients between FE and RE is systematic, providing evidence in favor of a FE model. The p -value for the test is less than 1%, indicating that the random effects model is not appropriate and that the fixed effects specification is to be preferred, since the null

hypothesis is rejected at 1% significant level. Furthermore, the estimation results show that individual effects are present, since the relevant χ^2 is significant at the 1% level.

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	80.314950	7	0.0000

Table 4.1. Correlated Random Effects Hausman Test

The null hypothesis: Ho = RE > FE; against Ha = FE > RE			
Test Summary	Chi-Sq. Statistic (χ^2)	Chi-Sq. d.f	Prob.
Cross-section random	80.314950	7	0.0000*

Source; computed from eviews result

The * indicate that reject the null hypothesis of random effects model is appropriate than the fixed effects model at 1% significant level. One can conclude that the p-value for the test from the above table is less than 1%, indicating that the random effects model is not appropriate and that the fixed effects specification is to be preferred. Thus, the cross-section fixed effects model is the appropriate for this study.

4.2. Classical Linear Regression Model (CLRM) Assumptions and Diagnostic Test

There are different assumptions of Classical Linear Regression Model (CLRM) in which the model should be tested before conducting panel data econometric procedures. The study tested the Classical Linear Regression Models (CLRM) assumptions. The diagnostic tests include Heteroscedasticity test (White test), Autocorrelation test, Normality test, Parameter Stability Test, Stability Test, and Multicollinearity Test. Most Prior academic literature, as mentioned in the literature review, examines determinants of banks' profitability using different panel data modeling techniques. Among others, Pasiouras and Kosmidou (2007) use ordinary least squares (OLS) technique in which differences between the observations and estimations are minimized in terms of sum of squares. The characteristics of the model and proposed variables of this research are not violating the

classical assumptions underlying the OLS model. These are checked by testing each assumption.

4.2.1 Heteroscedastic Test – White Test

Among the OLS assumptions, the first diagnostic test which is conducted in this study is heteroscedastic test. It stated that the variance of the errors is constant, σ^2 this is known as the assumption of homoscedasticity. If the residuals of the regression have systematically changing variability over the sample, that is a sign of heteroscedasticity. White test is the most popular test and it is used for general test of heteroscedasticity.

Heteroskedasticity Test: White (ROA)

F-statistic	26.57433	Prob. F(65,50)	0.0000
Obs*R-squared	112.7367	Prob. Chi-Square(65)	0.0002
Scaled explained SS	341.1096	Prob. Chi-Square(65)	0.0000

Heteroskedasticity Test: White(ROE)

F-statistic	2.156448	Prob. F(65,50)	0.0027
Obs*R-squared	85.50083	Prob. Chi-Square(65)	0.0451
Scaled explained SS	115.6694	Prob. Chi-Square(65)	0.0001

Table 4.2.Heteroskedasticity Test- White Test

The null hypothesis: Ho = there is no heteroskedasticity; against Ha = there is heteroskedasticity						
Heteroskedasticity Test: White						
ROA model				ROE model		
F-statistic	2.156448	Prob. F(65,50)	0.0000*	26.57433	Prob. F(65,50)	0.0027*
Obs*R-squared	85.50083	Prob. χ^2 (65)	0.0451*	112.7367	Prob. χ^2 (65)	0.0002*
Scaled explained SS	115.6694	Prob. χ^2 (65)	0.0001*	341.1096	Prob χ^2 (65)	0.0000*

*indicate fail to reject the Ho hypothesis at 10% significant level. The above table indicated that, both χ^2 and F-test versions fail to reject the null hypothesis even at 10% significant level, this indicates the variance of the errors is constant (i.e there is no the problem of homoscedasticity to both ROA and ROE models)

4.1.2 Autocorrelation Test

The second important diagnostic test which is performed in this research is the autocorrelation test. This assumption of OLS theoretically expressed by the numbers of scholars among that Brooks (2008) and Verbeek (2004) founded. They expressed as; $cov(u_i, u_j) = 0$, this is another assumption that is made of the CLRM's disturbance terms is that the covariance between the error terms over time (or cross-sectionally, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are 'auto -correlated' or that they are 'serially correlated'. The most common test of this assumption is by using the Durbin–Watson test and the Breusch-Godfrey test (Boorks, 2008, p. 144). As far as concerning this paper the researcher used both the Durbin–Watson test and the Breusch-Godfrey test to detect the problem of autocorrelation.

Breusch-Godfrey Serial Correlation LM Test: ROA

F-statistic	8.683254	Prob. F(2,103)	0.0003
Obs*R-squared	16.73651	Prob. Chi-Square(2)	0.0002

Breusch-Godfrey Serial Correlation LM Test: ROE

F-statistic	6.181885	Prob. F(2,103)	0.0029
Obs*R-squared	12.43196	Prob. Chi-Square(2)	0.0020

Table 4.3. Autocorrelation Test- Breusch-Godfrey Serial Correlation LM Test

Ho = There is no autocorrelation; against, Ha = There is autocorrelation						
Breusch-Godfrey Serial Correlation LM Test						
ROA model				ROE model		
F-statistic	8.683254	Prob. F(2,103)	0.0003	6.181885	Prob. F(2,103)	0.0029
Obs*R-squared	16.73651	Prob. χ^2 (2)	0.0002	12.43196	Prob. χ^2 (2)	0.0020
DW test	1.980030			1.972624		

Source; Computed from Eviews result

*indicate reject the Ho hypothesis at 1% significant level

In the above table the output of Eviews offers two versions of the test; an F -version and a χ^2 version from the Breusch-Godfrey Serial Correlation LM Test, while the second test presents the Durbin-Watson stat test. The conclusion from both versions of the test in this case is that the null hypothesis of no autocorrelation is rejected; this indicates the presence of the first order positive autocorrelation problem on both ROA and ROE models. Many scholars of the field highly recommended the concept of lagged variables to solve the problem of autocorrelation Brooks (2008) and Verbeek (2004). Similarly in this research the author used one period lagged dependant variable to solve the problem of autocorrelation

This finding is similar in line with earlier studies that examined the determinants of banks' profits Davydenko (2010), Athanasogloet *al.* (2005) and Berger *et al.* (2000). They conclude that, 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. To see this empirical fact, the study adopts a dynamic specification of the model by including a one year lagged profitability variable (Profit-1)

4.1.3 The Normality (Bera-Jarque) Test

Another third important diagnostic test conducted in this paper is the normality assumption (i.e the normally distributed errors). Brooks (2008) stated that the normality assumption ' $(u_t \sim N(0, \sigma^2))$ ' is required in order to conduct single or joint hypothesis tests about the model parameters. One of the most commonly applied tests for normality is the Bera—Jarque (BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments - the mean and the variance (Brooks, 2008, p.161). In case of this study, the researcher used BJ normality test to test the null hypothesis of normally distributed errors assumptions.

Since, the histogram is bell-shaped and the Bera--Jarque statistic is not significant. This means that the p -value given at the bottom of the normality test screen should be bigger than 0.1 to fail to reject the null of normality at the 10% significant level. So, the residuals are normally distributed in this study, concluded that there is no the problem of normality on both ROA and ROE models.

4.1.4 Parameter Stability Test

The reason behind stability test is to check the profitability and its' determinants reaction function stability and predictability for policy analysis and implication in responding to the internal and external determinants. This is another important test is to check whether profitability has linear relation with its determinants or not. To test the stability of parameter, the study conducted the Ramsey stability RESET test. The null hypothesis of this test says there is linear (stable) relation between the dependant and independent variables.

Ramsey RESET Test:

F-statistic	0.716734	Prob. F(1,104)	0.3992
Log likelihood ratio	0.796692	Prob. Chi-Square(1)	0.3721

Ramsey RESET Test:

F-statistic	2.640055	Prob. F(1,104)	0.1072
Log likelihood ratio	2.907922	Prob. Chi-Square(1)	0.0881

Table 4.4. Stability Test- Ramsey RESET Test

Ho = there is linear (stable) relationship between dependant and independent variables; against, Ha there is no stable relationship between dependant and independent variable						
Ramsey RESET Test:						
ROA model				ROE model		
F-statistic	0.716734	Prob. F(1,104)	0.3992*	2.640055	Prob. F(1,104)	0.1072*
Log likelihood ratio	0.796692	Prob. χ^2 (1)	0.3721*	2.907922	Prob. χ^2 (1)	0.0881**

Source; Compute from the Eviews result

* and ** indicate fail to reject the Ho hypothesis at 10% and 5% significant level correspondingly.

Thus, it can be concluded that the linear model for profitability ROA is appropriate at 10% significant level but the linearity of ROE model significant at 5% level. Thus, profitability indicators (ROA and ROE) have stable relationship with internal and external determinants in Ethiopian commercial banking business environment. However, the stability of ROA model less than ROE.

4.1.5. Multicollinearity Test

The final test conducted in this study is the multicollinearity test. The essence of this test is to identify the correlation between explanatory variables and to avoid double effect of

independent variable from the model. A correlation is a single number that describes the degree of relationship between two variables. In other words, multicollinearity describes the relationship among explanatory variables. As indicated on the correlation matrix almost all correlations that have occurred among explanatory variables are surprisingly weak correlations; this indicates there is no the existence of multicollinearity problem on the study.

The sizes (log of total asset) of Ethiopian commercial banks which are included in this study have shown a visible improvement during the last 14 years. Increase in the size of the bank shows a higher negative correlation with loan and advance (-0.513), capital adequacy (-0.404), expense management (-0.2580), liquidity (-0.363) net interest income to assets (-0.117). However, size has shown a positive relation with credit risk (0.212), deposit liability (0.490), real GDP (0.335) and inflation (0.226).

Correlation among Explanatory Variables

Table 4.5 Multicollinearity Test

	LNTA	CR	OE	LAS	TDS	NITAS	CAPAD	LIQ	RGDP	INF
LNTA	1	0.212	-0.258	-0.513	0.490	-0.117	-0.404	-0.363	0.335	0.226
CR	0.212	1.000	0.165	-0.272	0.083	-0.399	-0.473	-0.148	-0.130	0.019
OE	-0.258	0.165	1.000	-0.154	-0.223	-0.526	-0.081	0.082	-0.378	-0.164
LAS	-0.513	-0.272	-0.154	1.000	-0.065	0.423	0.143	0.084	-0.047	-0.041
TDS	0.490	0.083	-0.223	-0.065	1.000	0.014	-0.395	-0.217	0.168	0.189
NITAS	-0.117	-0.399	-0.526	0.423	0.014	1.000	0.445	0.055	0.216	0.094
CAPAD	-0.404	-0.473	-0.081	0.143	-0.395	0.445	1.000	0.349	-0.041	-0.046
LIQ	-0.363	-0.148	0.082	0.084	-0.217	0.055	0.349	1.000	0.056	0.094
RGDP	0.335	-0.130	-0.378	-0.047	0.168	0.216	-0.041	0.056	1.000	0.395
INF	0.226	0.019	-0.164	-0.041	0.189	0.094	-0.046	0.094	0.395	1.000

Source: Computed from eviews results

Regarding the macroeconomic variables, GDP has positive correlation almost all except CR, OE, LAS, and CAPAD, because the growth of the GDP of the country has its own positive contribution to the remaining variables.

4.2. Descriptive Statistics Results and Discussions

The descriptive statistics measures of mean, standard deviation, median, minimum and maximum of each variable in the sample is indicated in the table below. The descriptive statistics are presented after checking the normality of the data because the presence of non normality (outliers) probably results in biased means and standard deviations when incorporated in the descriptive statistics. They do not only affect the descriptive characteristics but could also deteriorate results from the regression using the OLS technique.

Table 4.6. Coefficients of Descriptive Statistics

variables		Mean	Median	Maximum	Minimum	Std. Dev.
Dependent	ROA	0.022645	0.025757	0.046262	-0.021256	0.010832
	ROE	0.216215	0.223735	0.715921	-0.568	0.139864
Independent	LNTA	22.05849	21.98774	25.99854	18.92230	1.422695
	CR	0.066050	0.040650	0.439977	0.000000	0.072050
	OE	0.929216	0.847384	2.553805	0.291370	0.375213
	TDS	0.716253	0.730011	0.836746	0.409878	0.089431
	LAS	0.497508	0.495415	1.677932	0.187690	0.167276
	LIQ	0.440045	0.430888	1.310013	0.021177	0.197774
	CADEQ	0.112889	0.105335	0.277838	0.037437	0.044055
	NITAS	0.028593	0.028964	0.050796	0.008645	0.008298
	RGDP	8.725714	10.30000	12.60000	-2.1	4.137442
	INF	13.45357	10.40000	44.40000	-8.2	12.91301

Source: computed from evIEWS results

The descriptive statistics of profitability measurements (ROA and ROE) indicates that Ethiopian commercial banks have an average positive profit over the whole study periods. From the total of 112 observations, the mean of ROA and ROE equals 2.2 and 21.6 percent with a minimum of -2.12 and -5.6 and a maximum of 4.6 and 7.2 percent respectively. That means, the most profitable bank of the sample banks earned 4.6 cents of net income from a single Birr of asset investment in-line with this have the margin of 7.2 percent. Moreover, the maximum losses incurred by some of the sample banks are a loss of 2.16 cents on each birr of asset investment with the margin of 1 percent. However, most of the remaining banks from the sample earned an average of 2.44 cents from each Birr invested by the bank with the margin of 4.35percent.

Likewise for the capital adequacy statistic, the large dispersion in the minimum and maximum observation of ROA there could be observed high variation in the equity-to-risk weighted asset ratio (CADEQ). On average, CADEQ equals 11.3 percent with a median of 10.5 percent. The average capital to risk weighted assets ratio is two times than the minimum capital to risk weighted assets ratio set by NBE on Directives No. SBB/50/2011. This indicates sound financial condition of Ethiopian commercial banks. In the industry there is high variation of CADEQ with the maximum of 27.7percent and a minimum of 3.7 percent. This high variation occurs, because of state owned commercial bank (CBE) dominated capital more than the sum of the other selected seven banks in the industry during the study periods.

The two variables that are employed in this study regarding risk are the credit risk and liquidity risk. The descriptive statistics of the first variable indicate that, from the total loan invested on average, 6.6 percent are non performing loan. This means the commercial bank industry of Ethiopia face an averagely 6.6% non-performing loan from the total loan invested per year.

This indicated that most banks from the sample incur averagely 6.6 cents as non-performing loan from one Birr loan invested on the customer. Thus, most banks had inefficiencies in timely collection of the loan granted to their customers.

The minimum value of Credit Risk in the industry for some banks is zero; this indicated that the quality of the asset for these banks is high and the deviation between the high quality asset and low quality asset are 6.6 percent. The descriptive statistics for liquidity risk also indicated that the availability of cash and cash equivalent assets are averagely 44 percent per year to repay short term deposits and borrowings. This means most banks in the industry have around 0.44 birr liquid asset to repay one birr short term deposits. The maximum and minimum value of Liquidity Risk (LR) is 131 and 2 percent respectively.

Furthermore, another observation is regarding loan and advance and deposit liability. There is a very large variation in the total loan-total asset ratio indicated by the range between 18.7 percent 167.7 percent. The mean of the total loan-total asset ratio equals 49.4 percent. This indicated on average, almost half of the total asset of the bank (49.4%) is kept in terms of loan. The large range between the medium and maximum value

implies that the most efficient banks have quite substantial loan advantage compared to the least efficient banks because, loan and advance is the main source of interest income for commercial banks.

Concerning deposit-asset ratio there is large variation indicated by the range between 40.9 percent to. The mean of deposit to asset ratio is 73.95 percent. This indicates the large portion of the asset of most commercial banks composed from customer deposit. These have a negative implication when large numbers of financial institution liability holders seek to withdraw their financial institution at the same time.

Among other descriptive statistics for the bank-specific variables like; the mean of operating expenses to net interest income (OE) ratio is 9.2 percent. This implies most banks from the sample incurred 9.2 percent operating expenses out of the net interest income per year. In other words the bank incurred 9.2 cents as operating expenses out of one Birr net interest income.

On the other hand, bank size which is measured by logarithm of total asset has standard deviation (1.4%) that means it is the least deviated variable from its mean as compared to others bank-specific variable. The maximum and the minimum value of bank size are 26 percent and 19 percent respectively. Another important variable is non-interest income to total assets ratio (NITAS). The mean of NITAS is 2.8 percent, this indicate, most banks from the sample earn 2.8 cents as non-interest income from one Birr asset.

4.3. Regression Results and Discussions

To examine the relationship between profitability measures and explanatory variables two regression analysis were run. The first regression analysis was undertaken to investigate the relationship between ROA and independent variables and the second was run between ROE and independent variables of this regression model. This section presents over all the empirical results of the regressions. Table 4.7 reports the results of all determinants (i.e. both internal and external). This indicates the result when industry-specific and macroeconomic variables (i.e. external factors) indicators enter in the equation.

Table 4.7. Fixed Effect Regression Result of both Internal and External variables

Table 4.7A. ROA Model Regression Result of both Internal & External Variables

ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.095357	0.015468	-6.164920	0.0000
LNTA	0.006446	0.000744	8.661434	0.000***
CR	-0.001500	0.010979	-0.136668	0.8916
OE	-0.011284	0.001981	-5.695222	0.000***
LAS	-0.000836	0.004503	-0.185758	0.8530
LIQ	0.003267	0.003207	1.018784	0.3109
NITAS	0.136752	0.100297	1.363473	0.1760
CADEQ	0.013775	0.020273	0.679491	0.4985
TDS	-0.032586	0.010657	-3.057744	0.002**
RGDP	0.000370	0.000150	2.468748	0.015**
INF	2.22E-06	4.24E-05	0.052236	0.9585
R-squared	0.812364	Adjusted R-squared	0.778429	
S.E. of regression	0.005099	Durbin-Watson stat	1.712103	
F-statistic	23.93936			
Prob(F-statistic)	0.0000***			

***Significant at 1%; **Significant at 5%; * Significant at 10%

Table 4.7B. ROE Model Regression Result of both Internal & External variables

ROE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.160659	0.253609	-0.633491	0.5280
LNTA	0.052042	0.012201	4.265215	0.000***
CR	-0.421529	0.180013	-2.341653	0.021**
OE	-0.199546	0.032487	-6.142360	0.000***
LAS	-0.076465	0.073827	-1.035725	0.3030
LIQ	0.043149	0.052575	0.820721	0.4139
NITAS	0.051065	1.644478	0.031053	0.9753
CADEQ	-1.433202	0.332399	-4.311690	0.000***
TDS	-0.554083	0.174729	-3.171088	0.002**
RGDP	0.002741	0.002459	1.114679	0.2678
INF	-0.000408	0.000695	-0.587235	0.5585
R-squared	0.697428	Mean dependent var	0.216215	
Adjusted R-squared	0.642707	S.D. dependent var	0.139864	
S.E. of regression	0.083602	Akaike info criterion	-1.979270	
F-statistic	12.74527	Durbin-Watson stat	1.565796	
Prob(F-statistic)	0.0000***			

***Significant at 1%; **Significant at 5%; * Significant at 10%

As shown from the above, the R-squared values of 81% and 70% were registered for the ROA and ROE respectively. R-squared is a measure of the goodness of fit of the explanatory variables in explaining the variations in banks profitability measure ROA& ROE.

R-squared value of 0.81 indicates that the explanatory variables in this study jointly explain about 81% of the variation in the profitability measure, return on asset. However, the remaining 19% of the variation in the profitability of commercial banks is to be explained by other variables which are not included. Moreover, R-squared value of 0.7 of the Return on Equity (ROE) shows that the independent variables in the study jointly explain 70% of the variation of profitability measure.

This implies that of explanatory variables power of the bank-specific determinants, in term of R^2 for both ROA and ROE models are 79% and 69% respectively but when the external determinants enter into the regression the explanatory power of the models (ROA and ROE) in terms of R^2 increased in to 81% and 70% correspondingly. As expected, the researcher observes differences in the coefficients and the significance of the variables when the external factors are introduced. The explanatory power of the models (in terms of R^2) that examines the determinants of ROA and ROE increases when the external factors are considered. This indicates studying of both internal and external determinants are significant.

The researcher stated the presence of first order positive autocorrelation in the model. This indicated the profitability of commercial banks of Ethiopia is not only determined by internal and external determinants but also by 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 is developed and the regression result of this model is describe in the following tables.

Table 4.8. Dynamic Effect of Regression Result of the determinants

Table 4.8A. Dynamic Effect of ROA Regression Result of the determinants

ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022430	0.022620	-0.991583	0.3240
LNTA	0.002354	0.000925	2.544532	0.0126**
CR	-0.031497	0.011242	-2.801742	0.0062**
OE	-0.008293	0.002222	-3.733148	0.0003***
LAS	-0.003352	0.005188	-0.646080	0.5198
TDS	-0.019216	0.008627	-2.227400	0.0284**
LIQ	0.009385	0.003585	2.617913	0.0103**
NITAS	0.085281	0.114593	0.744210	0.4586
CADEQ	0.024001	0.023785	1.009086	0.3156
LAGROA	0.214471	0.097337	2.203380	0.0301**
RGDP	0.000559	0.000182	3.065261	0.002***
INF	-1.03E-05	5.62E-05	-0.183726	0.8546
R-squared	0.701059	Adjusted R-squared		0.665316
S.E. of regression	0.006209			
F-statistic	19.61390	Durbin-Watson stat		1.458421
Prob(F-statistic)	0.000000			

***Significant at 1%; **Significant at 5%; * Significant at 10%

Table 4.8B. Dynamic Effect of ROE Regression Result of the determinants

ROE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.169088	0.280965	0.601811	0.5488
LNTA	0.033633	0.011523	2.918795	0.0044**
CR	-0.665832	0.157685	-4.222548	0.0001***
OE	-0.204568	0.030817	-6.638163	0.0000***
LAS	-0.079643	0.070701	-1.126475	0.2629
TDS	-0.404585	0.120532	-3.356670	0.0011**
LIQ	0.076279	0.049931	1.527697	0.1300
NITAS	-1.303246	1.584686	-0.822400	0.4130
CADEQ	-1.374952	0.298293	-4.609404	0.0000***
LAGROE	0.009652	0.092986	0.103804	0.0576*
RGDP	0.003814	0.002528	1.509065	0.1347
INF	-0.000446	0.000784	-0.569042	0.5707
R-squared	0.662481	Adjusted R-squared		0.622126
S.E. of regression	0.086211			
F-statistic	16.41612	Durbin-Watson stat		1.356932
Prob(F-statistic)	0.000000			

***Significant at 1%; **Significant at 5%; * Significant at 10%

The regression results of the coefficient of lagged profitability variables (LAGROA and LAGROE) are statistically significant both at 5% significance level. This significant coefficient of the lagged profitability variable confirms the dynamic character of the model specification, even though; the fixed effect model is relevant for this study.

Athanasoglou *et al.* (2005, p. 13) has explained about the coefficient of lagged profitability variables indicating that a value of γ between 0 and 1 implies that profits persist, but they will eventually return to their normal (average) level. A value close to 0 means that the industry is fairly competitive (high speed of adjustment), while a value of γ close to 1 implies less competitive structure (very slow adjustment)

The output of the study attests that ROA and ROE registered γ values of approximately 0.21 and 0.01 for the two models respectively. Thus, the coefficient value of γ in current study indicate that profits seem to persist to a moderate extent, and implies that the indicator of the presence of fairly competitive market structure in the current Ethiopian commercial banking sector.

The significant coefficient of lagged variable confirms that one should take into account profit persistence when attempting to explain banking profitability. The critical point here is that, the lagged variable neither predicts the profitability of a bank nor it explains the composition of the profitability of a bank. The lagged variable coefficient merely reflects that when banks are able to generate a positive profit in the previous year, it is likely that the bank is able to generate a positive profit this year.

Turning to the other explanatory variables, each determinant explained and analysis based on the previous tables which are the original regression results are summarized in the appendix II and the results of the estimations are based on model using fixed effect regression.

Under fixed effect regression table the value of F- statistic is 23.9 and 12.7 for models ROA and ROE respectively and both strongly significant at 1% significant level supporting the validity and stability of the model relevant for the study. Considering the

validity of the models particularly the fixed effect regression model the following sections discussed about regression results of all variables.

Among the bank specific variables, bank size (LNTA), liquidity (LIQ), Capital Adequacy (CADEQ) and non-interest income to total assets (NITAS), have positive effect on profitability of Ethiopian commercial banking industry. However, only bank size (LNTA) has significant effect on profitability of Ethiopian commercial banking industry. But variables like credit risk (CR), Operational Efficiency (OE) and deposit liability (TDS) have negative significant effect on profitability (both in term of return on asset and return on equity) of this industry. Among external variables real GDP growth of the country has positive significant effect on both assets return and return on equity.

It is vital to analyze to make inferences based on the ownership title of banks and their profitability determinants. Thus, the regression analysis is made based on state owned banks and privately owned banks separately. According to the regression result Bank Size (LNTA), Operational Efficiency (OE), liquidity risk (LR) and non-interest income (NITAS) have commonly significant effects on both state and private banks sector. The above profitability determinants are individually discussed in the next paragraphs referring regression result

➤ **Bank Size (LNTA):-**

The output of the research confirms that bank size has a positive and highly significant effect on profitability measures of banks at 1% significant level. This study consistent with the Market-Power (MP) hypothesis, which stated that relative size of a firm expands its market power and profits increases. Other empirical literatures (e.g. Athanasoglou, 2006 South Eastern European banks and Kosmidou, 2008 on Greece banks,) concluded that size is economics of scale for large banks. The finding of this study indicated that the larger the banks size, the higher the bank's profitability of Ethiopia banking industry.

From the regression output of the model, we fail to reject the null hypothesis because the coefficients of the bank size variable are positive and it is highly significant at 1%.

➤ **Liquidity Risk (LIQ):-**

The regression results of the liquidity risk in this research show that the relation between liquidity risk with both ROA and ROE is positive however insignificant. This result implies that less liquid banks have higher ROA, which is consistent with the researchers' expectations and the prior empirical findings (e.g Ommeren, 2011; Rasiah, 2010 and Eichengreen and Gibson, 2001). From their finding they check that the bank with more liquidity risk has the more return on assets (ROA). According to their justification the primary reason behind the positive relation between liquidity risk and profitability is; firstly, based on the risk-return hypothesis, more liquidity risk is associated with higher expected returns. Secondly, utilization of idle funds have the higher returns on liquid assets may also positively affect the profitability of those institutions with surplus liquidity (reduction of opportunity cost). In Ethiopia banking business environment the bank with little liquid assets have more asset return. This is consistent with the above empirical facts.

The output regression of the model depicts that liquidity and profitability are positively correlated however it is insignificant. Thus we fail to reject the null hypothesis

➤ **Capital Adequacy (CADEQ):-**

The coefficient of the capital adequacy (CADEQ) for the ROA model is positive but it is not statistically significant. However, it is negative for the ROE model and it is statistically highly significant determinants of profitability at 1% significance level. This finding is consistent with previous studies with Flamini et al. (2009); Naceur and Goaid (2001). According to those researchers a bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. This finding proved the sound financial condition of Ethiopian commercial banks.

The regression output of the model revealed that capital adequacy has a positive correlation with profitability (ROA) but insignificant, on the other hand, capital

adequacy has a negative correlation with profitability (ROE) and is significant at 1% significance level. Thus, we reject the null hypothesis.

➤ **Credit Risk (CR):-**

Credit risk is one of the important bank-specific determinants of profitability. Most literatures suggest that increased exposure to credit risk is obviously associated with decreased firm profitability (e.g Ommeren, 2011; Flamini et al., 2009; Athanasoglou *et al.*, 2005; and Belayneh, 2011). In line with this, this study found a negative and highly significant relationship between credit risk and profitability in Ethiopia commercial banking sector for only ROE model at 5% significance level but credit risk is not significant in explaining ROA model.

When the asset quality of the firm reduce the credit risk exposure of the firm is increased. According to this empirical fact, the problem symptom of asset quality is present in Ethiopian commercial banking industry. Since CR has negative and significant impact on profitability of the sector.

➤ **Loan and Advances (TAS):-**

Loan and advance to total assets has negative and insignificant effect on both return on assets (ROA) and return on equity (ROE). This result is not consistent with previous finding (Sastrosuwito and Suzuki, 2011 and Belayneh, 2011). They conclude the positive impact of TAS on banks profitability. This negative coefficient indicates, as discussed from the above, the commercial banks of Ethiopia especially the private banks are affected by credit risk. This implies the existence of large non-performing loan from the total loan and advance.

➤ **Deposit Liability (TDS):-**

Concerning TDS, it has positive and significant effect on the assets return (ROA) at 5% and a negative and significant Rate on return to assets (ROE) of Ethiopian commercial banks at 5% significance level. This research finding is consistent with the prior empirical evidence (e.g. Rasiah, 2010 and Moin, 2008). They suggested that, the primary function of the commercial banks are collecting deposits and giving loan to the public

from these deposits. So, the competitiveness and the profitability of the banks are depending on the degree of well performing of this activity. However, this finding is contradicted with the finding of some researchers (e.g Ommeren, 2011 and Belayneh, 2011), they believed that, Since, time and savings, deposits represent a relatively higher cost source of funds, the more a commercial bank is committed to time and saving deposit, the higher would be the funding cost and hence the lower the profits.

The regression output of the model revealed that asset quality of the Ethiopian banks is negatively correlated with profitability while the values are insignificant. Thus, we reject the null hypothesis.

➤ **Expenses Management or Operational Efficiency(OE):-**

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

This highly significant and negative coefficient of the cost to income ratio shows the existence of inefficient cost management system (poor quality of management) in Ethiopia commercial banks. Surprisingly, the poor expenses management is one of the main contributors to poor profitability performance of Ethiopian commercial banks. Because efficient cost management is a prerequisite for improved profitability of Ethiopian commercial banks, since the banks have not reached the maturity level required to link quality effects from increased spending to higher bank costs.

Based on the research finding, both state and private are affected by poor cost management system. The main reason might be the high operating, administrative and personnel expenses during the last fourteen years (2000-2013) operation period.

The regression output of the model indicated that operational efficiency is negatively correlated with profitability of banks with higher level of significance of 1%. Thus, we reject the null hypothesis.

➤ **Non-Interest Income to Total Assets (NITAS):-**

One of the important of bank-specific variables is non interest income to total assets. In his study (Belayneh, 2011) found out that there is a positive relation between non-interest income and profitability in Ethiopian banking industry. Consist with the above researcher, this study finds NII has a positive but insignificant effect on Ethiopian commercial banks profitability.

➤ **Economic Growth (GDP):-**

The researcher found out that GDP has highly statistical significant and positive impact on ROA and ROE at 1% and 5% significance level respectively. This results about GDP support the argument of the positive association between economic growth and the financial sector performance that revealed by the numbers of researchers. Like with the empirical evidence, the study also justified a positive and highly significant impact of Ethiopia real GDP growth and banks profitability in term of both asset return and interest margin. Finally, the general hypotheses which were set from the introduction part of the study are tested based on the findings of the study.

The regression output of the model has shown real GDP is positively correlated with profitability of banks with higher level of significance of 1%. Thus, we fail to reject the null hypothesis.

CHAPTER FIVE

SUMMARY, CONCLUSIONS & RECOMMENDATIONS

In this chapter the major findings of the study are summarized; conclusions are drawn based on the findings and recommendations are forwarded for the concerned bodies.

Strong and healthy financial system is a prerequisite for sustainable economic growth of a given country. In order to survive negative shocks and maintain a good financial stability, the financial managers and policy maker should identify the key performance determinants of commercial banks. Because of this, the current study specified an empirical framework to investigate the effect of bank-specific, industry-specific and macroeconomic determinants on the profitability of Ethiopian commercial banks from 2000 to 2013. Over the last 14 years a number of important changes occurred in the Ethiopian commercial banking industry, leading to increased competition and pressure bank profitability. The study also used an appropriate econometric methodology for the estimation of variables coefficient under fixed effect regression models. The following sections discussed about the final conclusion remarks of the study and applicable recommendations.

5.1. Summary and Conclusions

The study was conducted to investigate the determinants of profitability of commercial banks in Ethiopia. Specific objectives were to determine and evaluate the effects of bank-specific factors expressed within the CAMEL framework and macroeconomic factor. Balanced panel data of 112 observations from 2000 to 2013 of eight commercial banks was analyzed using multiple linear regressions method. In this study, secondary data analysis is used to investigate the major determinant factors of profitability of commercial banks in Ethiopia. With regard to secondary data analysis based on the financial statement of private banks and two regression models were used for two

profitability measures; (ROA), and (ROE). The major findings of the study results from secondary data analysis are presented as follows:

Descriptive analysis results revealed that the mean value of asset quality indicates that about 6.4 percent of total loan and advance of commercial banks was comprised non-performing loans. The mean value of net operational efficiency indicates that commercial banks are efficient because their operating expense per unit of operating return is low, which means for 0.29 Birr operating expense for one birr operating income. The mean value of liquidity value of 44 percent shows that the Ethiopian commercial banks was very liquid, two times more than the minimum statutory liquidity ratio of 20 percent set by National Bank of Ethiopia (NBE).

The regression result of the explanatory power of the bank-specific determinants only in terms of R^2 for both ROA model is 79%. But, when the external (both industry-specific and macroeconomic) determinants enter into the regression the explanatory power of the model ROA in terms of R^2 increased to 81% correspondingly. From this, the researcher can conclude that, the profitability of Ethiopian commercial banks explained by both internal and external determinants. However, profitability is more explained by bank-specific variables than the external variables

In relation to ROA, operational efficiency, bank size, deposit liability to total assets and GDP growth rate have significant impact on the profitability of Ethiopian commercial banks. All explanatory variables have a positive relationship with return on asset in agreement with the hypothesis except liquidity and deposit liability. However, asset quality and liquidity level of commercial banks included in this study didn't have significant relationship with ROA. The explanatory variables included in this study jointly explain about 81 percent of the variation in return on asset.

With regard to ROE as a profitability measure for the study, the size of bank has a positive relationship and significant at 1 percent significance level. While operational efficiency and capital adequacy shows negative relationship and they are statistically significant at 1%. On the other hand, credit risk and loan and advances showed a negative

relationship and they are also statistically significant with return on equity at 5% percent significance level.

Based on the findings it can be concluded that operational efficiency, bank size, level of GDP, capital adequacy, and deposit liability to total assets have significant impact on ROA; which means any increase (decrease) on the value of these variables leads to an increase (decrease) on profitability of commercial banks in Ethiopia. Operational efficiency, bank size and GDP have significant influence on ROE and except bank size all these variables have negative relationship with profitability of commercial banks.

5.2. Recommendations

It is vital to identify the determinants that mostly influence the overall performance of commercial banks in Ethiopia in order to increase performance and maintaining financial stability. Therefore, based on the study results the following recommendations are forwarded:

The banks' management organ should thoroughly study specific factors of profit determinants like capital adequacy, managerial efficiency, asset quality, liquidity and bank size so as to increase the performance of the industry.

The impact of credit risk (non performing loan) on commercial banks should be curbed by conducting thorough customer and business analysis before extending loans and advances. Otherwise, it will have a negative impact on the industry's performance as well as the country's economic growth

The operational efficiency or management efficiency of banks should be enhanced through different means so as to improve the performance of industry. Moreover, banks should heavily focus to enhance their performance on generating non -interest income since it will not affect the liquidity of position of banks.

Economy of scale derived from bank size play a crucial role in bank profitability. The benefit of size would reflect in the ability to reach wider markets. Banks should therefore

be encouraged to strategically expand their operations to areas where there exists growth potential.

In future, researches shall be conducted on the impact of new product innovation and its impact on profit. Moreover, the impact of compulsory bond purchase (27%) on any type of loan disbursements on banks profitability should be studied.

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Fixed Effect Regression Result of both internal and external variables
ROA model ROE Regression Result of both internal & external variables

Dependent Variable: ROA
 Method: Panel Least Squares
 Sample: 2000 2013
 Periods included: 14
 Cross-sections included: 8
 Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTA	0.001950	0.000455	4.284140	0.0000
CR	-0.047534	0.011052	-4.300816	0.0000
OE	-0.010518	0.002395	-4.391094	0.0000
LAS	-0.011209	0.004883	-2.295590	0.0237
TDS	-0.019696	0.009034	-2.180239	0.0315
NITAS	0.142595	0.118495	1.203381	0.2316
CADEQ	0.016476	0.018946	0.869650	0.3865
LIQAS	-2.76E-13	3.36E-13	-0.822775	0.4126
RGDP	0.000689	0.000188	3.660092	0.0004
INF	7.46E-05	5.44E-05	1.372479	0.1729
R-squared	0.647042	Mean dependent var		0.022645
Adjusted R-squared	0.615898	S.D. dependent var		0.010832
S.E. of regression	0.006713	Akaike info criterion		-7.084376
Durbin-Watson stat	1.240893			

Table 4.8C ROE model FE Regression Result of both internal & external variables

Dependent Variable: ROE
 Method: Panel Least Squares
 Sample: 2000 2013
 Periods included: 14
 Cross-sections included: 8
 Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.154438	0.263863	0.585294	0.5598
LNTA	0.035008	0.013368	2.618842	0.0103
CR	-0.083387	0.206088	-0.404618	0.6867
OE	-0.185664	0.031705	-5.855999	0.0000
LAS	-0.045160	0.072231	-0.625213	0.5333
TDS	-0.594297	0.167983	-3.537837	0.0006
NITAS	0.769365	1.593023	0.482959	0.6302
CADEQ	-1.459817	0.319328	-4.571530	0.0000
LIQAS	1.59E-11	5.77E-12	2.750867	0.0071
RGDP	0.003158	0.002373	1.330612	0.1865
INF	-0.000495	0.000670	-0.737988	0.4624

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.717964	Mean dependent var	0.216215
Adjusted R-squared	0.666958	S.D. dependent var	0.139864
S.E. of regression	0.080715	Akaike info criterion	-2.049556

F-statistic 14.07595 Durbin-Watson stat 1.756638
 Prob(F-statistic) 0.000000

Dynamic Effect of Regression Result of the determinants

ROA Dynamic Effect Regression Result of the determinants

Dependent Variable: ROA
 Method: Panel Least Squares
 Sample (adjusted): 2001 2013
 Periods included: 13
 Cross-sections included: 8
 Total panel (balanced) observations: 104

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022430	0.022620	-0.991583	0.3240
LNTA	0.002354	0.000925	2.544532	0.0126
CR	-0.031497	0.011242	-2.801742	0.0062
OE	-0.008293	0.002222	-3.733148	0.0003
LAS	-0.003352	0.005188	-0.646080	0.5198
TDS	-0.019216	0.008627	-2.227400	0.0284
LIQ	0.009385	0.003585	2.617913	0.0103
NITAS	0.085281	0.114593	0.744210	0.4586
CADEQ	0.024001	0.023785	1.009086	0.3156
LAGROA	0.214471	0.097337	2.203380	0.0301
RGDP	0.000559	0.000182	3.065261	0.0029
INF	-1.03E-05	5.62E-05	-0.183726	0.8546
R-squared	0.701059	Mean dependent var		0.023424
Adjusted R-squared	0.665316	S.D. dependent var		0.010733
S.E. of regression	0.006209	Akaike info criterion		-7.217383
F-statistic	19.61390	Durbin-Watson stat		1.458421
Prob(F-statistic)	0.000000			

ROE Dynamic Effect Regression Result of the determinants Dynamic

Dependent Variable: ROE
 Method: Panel Least Squares
 Sample (adjusted): 2001 2013
 Periods included: 13
 Cross-sections included: 8
 Total panel (balanced) observations: 104

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.169088	0.280965	0.601811	0.5488
LNTA	0.033633	0.011523	2.918795	0.0044
CR	-0.665832	0.157685	-4.222548	0.0001
OE	-0.204568	0.030817	-6.638163	0.0000
LAS	-0.079643	0.070701	-1.126475	0.2629
TDS	-0.404585	0.120532	-3.356670	0.0011
LIQ	0.076279	0.049931	1.527697	0.1300
NITAS	-1.303246	1.584686	-0.822400	0.4130
CADEQ	-1.374952	0.298293	-4.609404	0.0000
LAGROE	0.009652	0.092986	0.103804	0.9176
RGDP	0.003814	0.002528	1.509065	0.1347

INF	-0.000446	0.000784	-0.569042	0.5707
R-squared	0.662481	Adjusted R-squared	0.622126	
S.E. of regression	0.086211	Akaike info criterion	-1.955877	
F-statistic	16.41612	Durbin-Watson stat	1.356932	
Prob(F-statistic)	0.000000			

4.9a. Internal Variables regression fixed effects on ROA

Dependent Variable: ROA
Method: Panel Least Squares
Sample: 2000 2013
Periods included: 14
Cross-sections included: 8
Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.104345	0.015122	-6.900156	0.0000
LNTA	0.007097	0.000711	9.984870	0.0000
CR	-0.002014	0.011203	-0.179759	0.8577
OE	-0.012698	0.001947	-6.520494	0.0000
LAS	-0.001190	0.004606	-0.258263	0.7968
LIQ	0.003937	0.003256	1.209304	0.2295
NITAS	0.143879	0.102517	1.403459	0.1637
CADEQ	0.009183	0.020638	0.444933	0.6574
TDS	-0.033379	0.010831	-3.081843	0.0027

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.799274	Mean dependent var	0.022645
Adjusted R-squared	0.767911	S.D. dependent var	0.010832
S.E. of regression	0.005219	Akaike info criterion	-7.541643
Sum squared resid	0.002614	Schwarz criterion	-7.153286
F-statistic	25.48430	Durbin-Watson stat	1.562292
Prob(F-statistic)	0.000000		

4.9b. Internal Variables regression fixed effects on ROE

Dependent Variable: ROE
Method: Panel Least Squares
Sample: 2000 2013
Periods included: 14
Cross-sections included: 8
Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.188337	0.241436	-0.780071	0.4373
LNTA	0.055336	0.011347	4.876533	0.0000
CR	-0.433030	0.178858	-2.421077	0.0174
OE	-0.208724	0.031092	-6.713133	0.0000
LAS	-0.078677	0.073541	-1.069830	0.2874
LIQ	0.044316	0.051977	0.852610	0.3960
NITAS	0.053709	1.636761	0.032814	0.9739

CADEQ	-1.472918	0.329506	-4.470083	0.0000
TDS	-0.571217	0.172923	-3.303296	0.0013

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.693092	Adjusted R-squared	0.645138
S.E. of regression	0.083317	Akaike info criterion	-2.000757
F-statistic	14.45318	Durbin-Watson stat	1.507886
Prob(F-statistic)	0.000000		

4.10a. External Variables regression fixed effects on ROA

Dependent Variable: ROA
Method: Panel Least Squares
Sample: 2000 2013
Periods included: 14
Cross-sections included: 8
Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009544	0.001897	5.031179	0.0000
RGDP	0.001391	0.000213	6.543694	0.0000
INF	7.17E-05	6.81E-05	1.052645	0.2950

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.430687	Mean dependent var	0.022645
Adjusted R-squared	0.380454	S.D. dependent var	0.010832
S.E. of regression	0.008526	Akaike info criterion	-6.606295
Sum squared resid	0.007415	Schwarz criterion	-6.363572
Log likelihood	379.9525	Hannan-Quinn criter.	-6.507815
F-statistic	8.573709	Durbin-Watson stat	1.421937
Prob(F-statistic)	0.000000		

4.10b. External Variables regression fixed effects on ROE

Dependent Variable: ROE
Method: Panel Least Squares
Sample: 2000 2013
Periods included: 14
Cross-sections included: 8
Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.084607	0.026359	3.209822	0.0018
RGDP	0.015298	0.002954	5.179243	0.0000
INF	-0.000140	0.000946	-0.147770	0.8828

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.340599	Mean dependent var	0.216215
Adjusted R-squared	0.282416	S.D. dependent var	0.139864
S.E. of regression	0.118479	Akaike info criterion	-1.343115
Sum squared resid	1.431805	Schwarz criterion	-1.100391
Log likelihood	85.21442	Hannan-Quinn criter.	-1.244634
F-statistic	5.853970	Durbin-Watson stat	1.644580
Prob(F-statistic)	0.000001		

4.11. Fixed Effect Regression Result of State and Private Determinants separately

4.11a.Fixed Effect Regression Result of State banks ROA model

Dependent Variable: ROA

Method: Panel Least Squares

Sample: 2000 2013

Periods included: 14

Cross-sections included: 2

Total panel (balanced) observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.138464	0.077360	-1.789872	0.0924
LNTA	0.007158	0.003219	2.223792	0.0409
CR	-0.008471	0.026497	-0.319687	0.7533
OE	-0.011696	0.002890	-4.046735	0.0009
TLS	-0.000591	0.006751	-0.087522	0.9313
TDS	-0.024642	0.028896	-0.852781	0.4064
LIQ	0.014325	0.016740	0.855697	0.4048
CADEQ	0.080848	0.117281	0.689355	0.5005
NITAS	0.547441	0.314546	1.740417	0.1010
RGDP	-3.71E-05	0.000478	-0.077565	0.9391
INF	-0.000190	0.000128	-1.483422	0.1574

Cross-section fixed (dummy variables)

R-squared	0.857383	Mean dependent var	0.018746
Adjusted R-squared	0.759334	S.D. dependent var	0.012835
S.E. of regression	0.006297	Akaike info criterion	-7.000047
F-statistic	8.744440	Durbin-Watson stat	2.363882
Prob(F-statistic)	0.000076		

4.11b.Fixed Effect Regression Result of State banks ROE model

Dependent Variable: ROE

Method: Panel Least Squares

Sample: 2000 2013

Periods included: 14

Cross-sections included: 2

Total panel (balanced) observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.191826	1.655930	-0.719732	0.4821
LNTA	0.106345	0.068903	1.543410	0.1423
CR	-0.194196	0.567174	-0.342393	0.7365
OE	-0.310461	0.061867	-5.018220	0.0001
TLS	-0.060295	0.144507	-0.417244	0.6820
TDS	-0.735245	0.618545	-1.188668	0.2519
LIQ	0.175558	0.358337	0.489925	0.6308
CADEQ	-4.526420	2.510461	-1.803023	0.0902
NITAS	6.474843	6.733029	0.961654	0.3505
RGDP	0.001297	0.010235	0.126702	0.9008
INF	-0.002894	0.002737	-1.057444	0.3060

Cross-section fixed (dummy variables)

R-squared	0.806272	Adjusted R-squared	0.673084
S.E. of regression	0.134785	Akaike info criterion	-0.872746
F-statistic	6.053638	Durbin-Watson stat	1.983424
Prob(F-statistic)	0.000690		

4.11c.Fixed Effect ROA Regression Result of privately owned banks

Dependent Variable: ROA

Method: Panel Least Squares

Sample: 2000 2013

Periods included: 14

Cross-sections included: 4

Total panel (balanced) observations: 56

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.049279	0.025496	-1.932840	0.0600
LNTA	0.003783	0.001060	3.567603	0.0009
CR	-0.087772	0.045259	-1.939334	0.0592
OE	-0.016881	0.003277	-5.151891	0.0000
TDS	-0.006205	0.011778	-0.526839	0.6011
TLS	0.000172	0.009999	0.017207	0.9864
LIQ	0.003322	0.003987	0.833258	0.4094
NITAS	0.365877	0.077886	4.697565	0.0000
CADEQ	-0.001134	0.018832	-0.060220	0.9523
INF	-1.02E-05	4.94E-05	-0.207217	0.8368
RGDP	0.000200	0.000199	1.005423	0.3205

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.891026	Mean dependent var	0.024413
Adjusted R-squared	0.857296	S.D. dependent var	0.010666
S.E. of regression	0.004029	Akaike info criterion	-7.978207
F-statistic	26.41635	Durbin-Watson stat	1.730062
Prob(F-statistic)	0.000000		

4.11d.Fixed Effect ROE Regression Result of privately owned banks

Dependent Variable: ROE

Method: Panel Least Squares

Sample: 2000 2013
 Periods included: 14
 Cross-sections included: 4
 Total panel (balanced) observations: 56

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.210183	0.203962	1.030503	0.3085
LNTA	0.005096	0.008553	0.595860	0.5544
CR	-0.602976	0.354785	-1.699553	0.0964
OE	-0.004719	0.026524	-0.177918	0.8596
TDS	-0.270110	0.086026	-3.139870	0.0031
TLS	0.019503	0.080921	0.241011	0.8107
LIQ	0.031885	0.031922	0.998857	0.3235
NITAS	0.473139	0.626588	0.755103	0.4543
INF	5.56E-05	0.000400	0.139000	0.8901
RGDP	-0.000121	0.001607	-0.075459	0.9402

Cross-section fixed (dummy variables)

R-squared	0.537816	Mean dependent var	0.141405
Adjusted R-squared	0.408835	S.D. dependent var	0.042436
S.E. of regression	0.032628	Akaike info criterion	-3.807143
F-statistic	4.169717	Durbin-Watson stat	0.993681
Prob(F-statistic)	0.000249		

Regression analysis result between ROA and explanatory variables

Dependent Variable: ROA
 Method: Panel Least Squares
 Sample: 2000 2013
 Periods included: 14
 Cross-sections included: 8
 Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.095357	0.015468	-6.164920	0.0000
LNTA	0.006446	0.000744	8.661434	0.000***
CR	-0.001500	0.010979	-0.136668	0.8916
OE	-0.011284	0.001981	-5.695222	0.000***
LAS	-0.000836	0.004503	-0.185758	0.8530
LIQ	0.003267	0.003207	1.018784	0.3109
NITAS	0.136752	0.100297	1.363473	0.1760
CADEQ	0.013775	0.020273	0.679491	0.4985
TDS	-0.032586	0.010657	-3.057744	0.002**
RGDP	0.000370	0.000150	2.468748	0.015**
INF	2.22E-06	4.24E-05	0.052236	0.9585

R-squared	0.812364	Mean dependent var	0.022645
Adjusted R-squared	0.778429	S.D. dependent var	0.010832
S.E. of regression	0.005099	Akaike info criterion	-7.573362
F-statistic	23.93936	Durbin-Watson stat	1.712103
Prob(F-statistic)	0.0000***		

***Significant at 1%; **Significant at 5%;

Regression analysis result between ROE and explanatory variables

Dependent Variable: ROE

Method: Panel Least Squares

Sample: 2000 2013

Periods included: 14

Cross-sections included: 8

Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.160659	0.253609	-0.633491	0.5280
LNTA	0.052042	0.012201	4.265215	0.000***
CR	-0.421529	0.180013	-2.341653	0.021**
OE	-0.199546	0.032487	-6.142360	0.000***
LAS	-0.076465	0.073827	-1.035725	0.3030
LIQ	0.043149	0.052575	0.820721	0.4139
NITAS	0.051065	1.644478	0.031053	0.9753
CADEQ	-1.433202	0.332399	-4.311690	0.000***
TDS	-0.554083	0.174729	-3.171088	0.002**
RGDP	0.002741	0.002459	1.114679	0.2678
INF	-0.000408	0.000695	-0.587235	0.5585

Cross-section fixed (dummy variables)

R-squared	0.697428	Adjusted R-squared	0.642707
S.E. of regression	0.083602	Akaike info criterion	-1.979270
F-statistic	12.74527	Durbin-Watson stat	1.565796
Prob(F-statistic)	0.000000		

Dear Muler,

I do want to appreciate your overall performance and research outputs –keep-it-up. Your work is neat and to the point. If you get time; however, you better add some discussions on the previous findings of others in similar studies (especially in the descriptive results). If not, what you have is enough make it ready for submission by adding the remaining parts of the paper. Moreover in the inferential statistics you better clearly identify the key determinants of the banks' profitability apart from what you discussed so far. At last as of today send me the final report along with the data set of your research. Once I confirmed, I will let you about the final approval for submission.

Wish you a happy graduation in advance!!!