Determinant of Commercial Banks Performance in Ethiopia

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List of Acronyms

AIB - Awash Internationa Bank

BOA - Bank of Abyssinia

CBE – Commercial Bank of Ethiopia

DB – Dashen Bank

GDP - Gross Domestic Product

NBE - National Bank of Ethiopia

Nib – Nib International Bank

ROA Return on Asset

SBS-size bank system

MS-money supply

INF-Inflation

CAP-capital adequacy

CONC-Concentration

INDIV-Income diversification

LIQ-Liquidity

OPE-Operational efficiency

OLS-Ordinary least square

LDR-Loan to deposit ratio

NIM-Net income margin

BLUE-Best linear unbiased estimator

CLRm-Classical linear regression model

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Abstract

Both internal and external determinants of Bank performance affect the performance of Commercial Banks in Ethiopia. This study identifies bank specific, industry specific and macroeconomic factors that determine the performance of Ethiopian commercial banks. The study used panel data of six commercial banks have been the subject for the study ranging from 2006 to 2016. The study employed an explanatory type of research and secondary financial data were used. The study bank's Audited financial statement, National Bank of Ethiopia and Ministry of finance and Economic Cooperation has been the main source for the study and the panel analysis has been carried out to obtain the result for this empirical study. The study used ROA as a Dependent variable and capital adequacy, operational efficiency, liquidity, income diversification, concentration, GDP, inflation and money supply as independent variable Based on the result of Hausman specification test the study used fixed effect model. The empirical results showed that capital, operational efficiency, income diversification, concentration and money supply have significant relationship with performance of Ethiopian commercial banks. However, the result shows insignificant relationship between performance of Ethiopian commercial banks with liquidity, GDP and inflation.

KEY WORD; Commercial banks, Internal and External determinants, Bank specific,Industry specific Performance

CHAPTER ONE

INTRODUCTION

1.1 Back ground of the Study

Financial institutions are institutions that provide financial service for its clients or members. The most important financial service provided by financial institutions is rendering service as intermediaries to facilitate the flow of money through the economy. Financial institution contributes to economic growth of the country by making funds available for investor to borrow as well as financial deepening in the country (otuori, 2013). The importance banks originated from their role as main channels of savings and allocates of credit in an economy.

Like Ethiopia financial sector is dominated by banking industry, effective and efficient function of banks has significant role in accelerating economic growth (berhanu ,2015).the banking

environment in Ethiopia has, for the past decades, under gone many regulatory and financial reforms like other African country s and the rest of developing world.these reforms have brought about many structural changes in in the banking sectors of the country have also encourage the banks to enter and expand their operation in the industry (dawit b,2017).

On the determinants of banks performance makes it clear that banks also have another key role in trade and payment system in that it reduces transaction cost and increase convenience the consistency and statement of any economy great extent depend on the stability of its banking sector. If the banking industry does not perform well, the effect to the general economy of the country could be huge and broad due to the fact that banks are the critical part of financial system and play a pivotal role in contributing to a country's economic development (Said and Tumin, 2011).

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Today, the bank performance has become a favorite subject for many stakeholders such as customers, investors, government and the genera l public. A stable and efficient financial system represents efficient allocation of resources and becomes the foundation of rising of financial performance of an organization which leads to achieve their ultimate objectives (Raza et al, 2011).

Banks' regulatory authorities are directly liable to evaluate the performance of each banking business and they should have to sense any future challenges regarding the performance of all banks. Therefore, beside asked for specific statements highlighting the performance of financial operation for evaluating banking industry, onsite inspection and critical studies are required to find out the accuracy and to judge on the stand of their performance (Iqbal, 2012).

According to previous studies, determinants of performance are categorized into two main groups: external and internal. The Internal determinants are also sometimes called microeconomics determinants or inherent performance which are specific to each bank and that, in many cases, are the direct result of managerial decisions, so such management effects will

definitely affect the operating result of banks. External determinants, on the other hands, are variables that reflect economic and legal environment which are out of the control of the management of the banks. They are again grouped in to two parts as factors relating to the industry structure and to the macroeconomic environment within which the banking system operates. Many studies have attempted to explain the contribution of a particular variable on the performance of banks. It should be noted that very often, the authors found different results even contradictory Rao&Tekeste (2012), Ameur and Mhiri (2013), Ongore and Gemechu (2013), Alper and Anbar (2011), Athanasoglou, et. al.(2005), Alexiou and Sofoklis (2009), Sufian and Chong (2008). This is mainly due to the different data they use, which covers different areas and periods. Thus, some authors have studied the performance data from several countries, such as Athanasoglou et Al. (2006) Molyneux&Thornton (1992), Flamini et al. (2009) and Goddard et al. (2004). And others are studied in specific countries such as, Ameur et al. (2013), Dietrich and Wanzenried (2011), Guru et al. (1999). This paper focused on identifying explanatory factors that affect the performance of commercial Banks operating in Ethiopia.

1.2 Statement of the Problem

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

The recent economic crisis has highlighted that a well-functioning financial system is significantly important for economic growth. the financial system enables an economy to be

more productive as it allows investors with few resources to use savings from those with few prospective of investing. Higher profitability not only allows banks to generate funds to grant more credit to the economy, but is also important for regulatory as it guaranty more flexible capital ratio, even in a riskier business environment. In Addition, bank profitability must also lead to fair return for its shareholders (abera, 2012).

To achieve the vision of Ethiopian growth plan to become a middle-income level country, it is vital for the banking industry to develop a safe, efficient and reliable infrastructure that enhance the effectiveness of monetary policy and broad access of financial services to the public. The banking sector is an indispensable financial service sector supporting development plans through intermediating flow of funds from those who have surplus capital to deficit units and supporting financial and economic government policies. Through loans and investments, banks promote economic development, job creation, and easy transfer of funds between individuals or businesses. Banks are, in effect, a community's economic engine (Hoenig, 2010).

A single bank is highly connected with other banks for payment system and/or other various functions. The failure of a single bank not only affects its shareholders and depositors rather it also affects the performance of other banks and the whole economy of the country. The recent global recession can be taken as an example of economic disaster that occurred by the failure of banking business. So, the government of any country must have a high concern about the performance of banks.

Performance difference for those banks operating in similar macroeconomic environment can be assured through the success of their competitive strategies and other managerial procedure. Comparative advantages, therefore, may arise from the bank's size, asset growth, and risk management quality, market share, ownership structure, and concentration index. Thus, these explanatory variables of banks' performance should be extracted in empirical researches. That is why the determinants of bank performance have attracted the interest of academic research as well as of bank management, and bank supervisors.

In this paper, bank performance, in view of profitability, is measured by Return on Asset, Return on Equity and Net Interest Margin. Based on previous studies on the area, bank-specific,

industry-specific and microeconomics variables such as, bank size, capital adequacy, expenses management, liquidity risk, income diversification, concentration, bank size system, inflation, and economic growth are incorporated. For all the aforementioned reasons, like limited stock of knowledge on determinants of bank profitability, the lack of consensus in the banking literature on the factors that affect bank profitability, this study contributes its share to the literature in general and the development and growth of the banking sector of Ethiopia in particular by identifying the key factors that affect the profitability of Ethiopian commercial banks. So the purpose of this paper is to investigate the effect of bank-specific, industry specific and macroeconomic factors on Ethiopia's bank performance.

1.3 Objectives of the Study

1.3.1General objective:

The main objective of the study is to examine bank-specific, industry specific and macroeconomic determinants of commercial banks performance in Ethiopia.

1.3.2 Specific Objectives

- To examine the significance of bank size on performance of commercial banks
- To investigate liquidity influence on the performance of commercial banks
- To find out the correlation between income diversification and banks performance
- To discover the effect GDP growth rate on performance of commercial banks

1.4 Hypothesis

HO1: There is a positive significant relationship between bank size and performance of Ethiopian commercial banks..

HO3: There is a negative significant relationship between liquidity and performance of Ethiopian commercial banks.

HO4: There is a positive significant relationship between income diversification and performance of Ethiopian commercial banks.

HO5: There is a positive significant relationship between GDP growth and performance of Ethiopian commercial banks

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1.5 Significance of the Study

Significance of study is an important part of the research as it exhibits the relevance of the study. Identifying bank performance determinant factors might vitally important for all stake holders, such as the owners, the investors, the debtors, the creditors and depositors, the managers of banks, the regulators and the government. It gives direction to the debtors and the investors to make decision whether they should invest money in bank or invest somewhere else. It also flashes direction to bank managers whether to improve its deposit service or loan service or both to improve its finance. . In general, the paper is to show the bank specific, industry specific and macroeconomic determinants of performance of commercial banks in Ethiopia. It may also used as a starting point for further study conducted on banking performance with different technique.

1.6 Scope of the Study

The scope of the study was confined to all banks registered in Ethiopia as commercial banks within the study period. Performance of banks can be expressed in terms of competition, concentration, efficiency, productivity and profitability, but in this study performance is defined as profitability. Therefore, measuring performance (profitability) is delimited to three indicators-return on asset, return on equity and net interest margin-, and ten variables. The reason for the restriction of variables to ten is that the focus of most literatures lays on them and the availability of data, for instance, the study excludes credit risk due to confidentiality of data on non-performing loan or provision for loan.

1.7 Limitation and scope

Even though there are other formal, semiformal and informal financial institutions, the study focused only on the performance determinant of commercial banks in Ethiopia. The determinants of commercial banks performance that are used in this study are those frequently described in conventional banking studies and literatures. It is acknowledged that there are other factors that may impact on performance of banks but not included in this study. The scope of the study is

limited to six commercial banks in Ethiopia. The data required for defining internal & external factors were limited to 11 years (2006-2016).The balance sheet and income and loss statements of six Ethiopian commercial banks were collected from the banks. In addition, the study used bank sector data and countrywide macroeconomic data that were driven from National Bank of Ethiopia and MoFEC.

1.8 Organization of the Paper

The paper is organized in five chapters. Chapter one is the introduction part that addresses; background of the study, statement of the problem, objective of the study, hypothesis of the research, scope of the study, significant of the study, Chapter two presents theoretical and empirical review of the literature related. Chapter three provides research design and methodology employed for the research, Chapter four Data analysis and interpretation, Chapter five Summary, Conclusions and Recommendations

CHAPTER TWO

LITERATURE REVIEW

Several factors influence banks operations and banks performance. The purpose of this chapter is to review the literatures related to bank performance and its determinants.

2.1 theoretical Literature

2.1.1 Bank performance

Better bank performance increases the reputation and image from public or market point of view. The economic literature pays a great deal of attention to the performance of banks, expressed in terms of competition, concentration, efficiency, productivity and profitability (Bikker and Bos, 2006). The key driver of banks' performance remains earnings, efficiency, risk-taking and leverage (ECB, 2010). A comprehensive and commonly accepted determinant of performance for financial institutions like banks does not exist in the literature. Instead, different researchers have attempted to estimate empirical factors affecting the performance of banks using financial data. Bank management is mainly profit-driven. Profitability is an indicator of the bank's

competitive position in banking markets and of the quality of its management, ensuring the health of the banking system. Profitability is also considered as a bank's first line of defense against unexpected losses, as it strengthens its capital position and improves future potentials through the investment of retained earnings (ECB, 2010). Profitability is the efficiency of banks at generating earnings which will be measured by profitability ratios and banks, therefore, earn profit by acquiring funds at a cost from severs and lending those funds to borrowers by charging customers for providing various services (Hubbard, 2002).

Determinants of bank performance are categorized as bank-specific, industry specific and macroeconomic factors. Bank specific indicators include: bank size, capital adequacy, operational efficiency, liquidity, loan deposit ratio, and income diversification. The common measure for industry-specific representative used in the various studies is bank-concentration and bank size system. The key macroeconomic variables, on the other hand, include growth in GDP and inflation.

2.1.2 Bank Performance Indicators.

Bank performance proxy measures are different in various literatures. In most banking literature, such as Rao&Tekeste (2012), Ongore and Gemechu (2013), Alper and Anbar (2011), Athanasoglou, et. al., (2005), Alexiou and Sofoklis (2009), and Sufian and Chong (2008), on the issue of investigating the factors that influence the performance of the bank are most commonly employed one or two or all of the three alternative measures (ROA, ROE and NIM) were used. All these three standard measures of profitability are considered under this study on the basis of annual accounting data similar to the approach followed by (Ameur and Mhiri, 2013). Each ratio looks at a slightly different aspect of bank profitability (Athanasoglou, 2006).

Return on Asset

ROA is one of the major ratios that indicate the profitability of a bank and it has emerged as the key ratio for the evaluation of bank profitability and has become the most common measure of bank profitability in the empirical literature Rao&Tekeste (2012), Alkhatib, (2012), AlexiouandSofoklis (2009), and Ana et. al. (2011). The ROA is defined as the ratio of net profits to total assets. It measures the ability of a bank's management to generate income by utilizing the

company assets although it may be misleading due to off-balance-sheet activities (Athanasoglou, 2006, Dietricha and Wanzenriedb, 2009). In other words, it shows how efficiently the resources of the company are used to generate profit. A higher ROA shows that the company is more efficient in using its resources.

Return on Equity.

The other financial ratio to measure the bank performance is ROE that reflects how much profit a bank earned compared to the total amount of shareholder equity invested or found on the balance sheet and it measure s how effectively a bank management is using shareholders' funds. The ROE is defined as the ratio of net profits to total equity. A business that has a high return on equity is more likely to be one that is capable of generating cash internally. Thus, the higher the ROE the more effective the management in utilizing the shareholders capital and the better the company is in terms of profit generation.

ROE is the product of ROA and assets-to-equity ratio (equity multiplier that measures financial leverage). Essentially the ROE–ROA relationship clearly illustrates the fundamental tradeoff that banks face between risk and return, whereas the equity multiplier reflects the leverage or financing policies, i.e. the debt-equity proportion that the bank management used to fund the bank. Athanassoglou, (2005) argues that an analysis based on ROE disregards the risks associated with leverage, often a consequence of regulation. On the other hand, Staikouras and Wood (2011) employ ROE as an appropriate profitability measure, arguing that for many European banks the off-balance sheet business makes a significant contribution to total profit. The earnings generated from these activities are excluded from the denominator of ROA.

According to Rivard and Thomas (1997), bank profitability is best measured by ROA for two primary reasons. One first reason is that ROA is not distorted by high equity multipliers and the second one is that ROA reflects a better measure of a bank's ability to generate returns on its assets. Moreover, ROA takes in to consideration the disparity in the absolute magnitude of the profits that may be related to size (Guru et al, 1999).

Net Interest Margin

Finally, the NIM variable focuses on the profit earned on interest activities. It is defined as the net interest income divided by total earning assets which contained Deposit with foreign Banks, Treasury Bills, Other Investments/bonds, Sundry Debtors & Other debit balances, and Total Loans Advances. It measures the difference between the interest income generated by banks and the amount of interest paid on borrowed funds, relative to the amount of their (interest earning) assets. It means that NIM measures the gap between the interest income the bank receives on loans and securities and interest cost of its borrowed funds with respect to the average amount of the assets on which earned income is generated in that time period. While the ROA measures the profit earned on assets and reflects how well bank management uses the bank's real investment resources, the NIM focuses on the profit earned on lending, investing and funding activities. It reflects the cost of bank intermediation services and the efficiency of the bank. The higher the net interest margin, the higher the bank's profit and the more stable the bank is. However, a higher net interest margin could reflect riskier lending practices associated with substantial loan loss provisions. The problem that may encounter on the financial ratios particularly with ROA and ROE is that the total values of assets and equity may not remain constant overtime, so computing the ratios only by the ending balance of total asset or equity may not be justifiable. Hence, average values of consecutive year-end balance sheet figures are normally used to capture changes in assets during the fiscal year. Thus, following the footpaths of previous studies(Kosmidou, 2008; Dietrich and Wanzenried, 2009) and taking into account the profitability measures of commercial banks used by NBE, Return on average asset and Return on average equity are used to measure the profitability of the commercial banks in the study.

Literature, in calculating ROE and ROA, differ in using pre-tax and post-tax profits. Some sticks on before tax profit especially in the study of cross country banks performance/profitability analysis due to different taxation policy employed in different country. However, in studies that are limited to the boundaries of one nation, the choice between pre-tax and post-tax profits may not be very important because all the banks will be required to pay tax as per the country's corporate tax law which is equally applicable to all the banks (Guru et.al., 1999). Therefore, since the commercial banks operating in Ethiopia are also subject to the same tax law, the profit after tax (net profit) has been used as numerator in computing the ROA. The paper attempted to examine the impact of an extended number of factors that are distinguished as internal and

external determinants on banks performance. The select ion criteria of these variables are based on the results of existing empirically studies that shows significant influence of performance and the availability of each variable data.

2.1.3 Bank Specific Variables

Bank Size

Bank size is measured by the natural log of total assets. Size is included in the regression as a proxy of bank size to capture the possible cost advantages associated with the economies of scale. In the literature, mixed relationships are found between size and profitability. Large banks are likely to have an advantage of engaging in higher investment diversification than small banks. Since this diversification reduces risks and economies of scale lead to increase operational efficiency through minimizing costs, positive relationship is expected between bank size and profitability (Rao&Tekeste, 2012 and Alper and Anbar, 2011. On the other hand, in the diversification of bank branches, for instant, the operational expense may get higher and the variable may exhibit negative effects Ameur and Mhiri, 2013 and Sufian and Chong, 2008. The impact of bank size on its profitability cannot be theoretically anticipated (Ongore, and Kusa, 2013; Dietricha and Wanzenriedb, 2009). Hence, the expected sign of the coefficient of bank size is unpredictable based on academic literature. This analysis used the logarithm of total asset to capture the potential non-linear effect of size similar to Athanasoglou et al. (2008) Alexiou and Sofoklis (2009). Capital Adequacy (CAR) Capital adequacy (Equity-Asset Ratio) reflects the capital strength or capital structure of a bank. It is one of the bank specific factors that influence the level of bank profitability. Strong capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis and it increases safety for depositors during unstable macroeconomic conditions. Large size of equity is expected to reduce the bank risk and increases a bank's creditworthiness in reducing its funding cost for a bank with higher equity to assets ratios will normally have a lower need of external funding. However, lower capital ratios in banking imply higher leverage and risk, which therefore lead to greater borrowing costs. CAR variable is included in the regressions to examine the link between profitability and bank capitalization (Dietricha and Wanzenriedb, 2009). Most literatures results show that it has positive relationship with profitability (Rao&Tekeste, 2012; AmeurandMhiri, 2013; Ongore and Gemechu, 2013; Athanasoglou, et. al., 2005; and Sufian and Chong, 2008. On the contrary, some

like Ayandaet. al. (2013) revealed negative relations. Especially against ROE, it is expected to have a negative relationship due to dilution effect.

Operational Efficiency Cost Income Ratio (CIR) reflect bank's operational efficiency and it is defined as non interest costs (operating cost, such as administrative costs, staff salaries and property costs excluding bad debts and doubtful expenses) divided by total of interest income and non-interest income (Dietricha and Wanzenriedb, 2009). CIR depicts the cost incurred per income generated. The study, therefore, used this variable to measure the impact of operational efficiency on bank profitability. CIR used as an indicator of management's ability to control costs and is expected to have a negative relation with profits, since improved management of these expenses will increase efficiency and therefore raise profits (Guru et al. 2002). 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 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. The study revealed that efficient expenses management was one of the most significant in explaining high bank profitability (Guru et al., 1999).

Liquidity Risk

Liquidity is measured by liquid asset to total asset ratio. Since insufficient liquidity is one of the major reasons of bank failures, in addition to the maintenance of cash reserve with the Central Bank, the commercial banks are also required to keep up a minimum level of liquid assets. Commercial banks may confront with liquidity deficit, when they face a problem of meeting a large amount of demand (withdrawals). In such a situation, banks may be forced to raise additional liquid funds by borrowings or disposing some of their liquid assets. Usually, short-term borrowings are costly and the loss of income from the sale of liquid assets will tend to have an adverse effect on profitability. On the other hand, idle funds and the lower returns on liquid assets may also adversely affect the profitability of those banks with surplus liquidity. Therefore, liquidity may have a positive or a negative effect, and its management represents yet another important determinant of commercial bank profitability (Rasiah, 2010).

Income diversification (DIV)

Non-interest income is other alternative means of income other than earning from loans. Banks generate income from off-balance sheet such as from letters of credit and this non-interest income would represent a key source of bank revenue (Rasiah, 2010). Thus, the ratio of non-interest income over average assets is entered in the regression analysis as a proxy measure of income diversification onto non-traditional activities. Non-interest income consists of service charges, commission, guarantee fees, net profit from sale of investment securities, and foreign exchange profit. Thus, Bankers have found a promising channel for boosting the income statement by diversifying their income sources. The variable is expected to exhibit positive relationship with bank profitability

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Loan to Deposit Ratio (LDR)

Loans are the most important indicators of banks performance in the bank financial statements because they reflect the bank's primary activity. Assumed, other variables constant, the higher the rate of transforming deposits into loans, the higher the profitability will be. For that, a positive relationship between loan deposit ratio and banks profitability is expected. On the other hand, if increasing loans leads to higher funding requirements, a negative impact of the loan ratio on the banks profitability may accrue Alexiou and Sofoklis (2009) and Ana et. Al.(2011).

2.1.4 Industry Specific Determinants

Concentration

It measures the market structure in the banking industry by means of the bank concentration variable. Market concentration is measured by using the Herfindahl-Hirschman (H-H) index (Athanasoglou et al., 2005) or the ratio of the three largest banks' assets to the total assets of the entire banking sector. In this study market concentration is measured like the previous researcher (Athanasoglou et al., 2005) by using the Herfindahl-Hirschman (H-H) index, which is the sum of the squares of market share of the sample banks included in this particular study. The high concentration ratio in the market creates greater than average efficiency in these markets yielding a positive profit concentration relationship (Berger, and Hannan, 1989). In Ethiopia banking business environment study conducted by (Belayneh, 2011) indicated that the existence of

negative and significant relationship between the declining market concentration and Ethiopian commercial banks profitability. it is expected that a higher bank concentration has a positive impact on profitability. On the other hand, a higher bank concentration might be the result of a tougher competition in the banking industry, which would suggest a negative relationship between performance and market concentration. As a result, the overall effect of market concentration on banking performance is again indeterminate.

Size Bank System (SBS):

Reflect the importance of bank financing in the economy and it is measured by the ratio of total assets of banks to GDP. Regarding to the bank size system, Demerguç-Kunt and Huizingha (1999) provide the evidence that small size bank system allow to high margins and profits, when they explore the bank profitability of 80 countries over the 1988-1995 period. As well, BenNaceur (2003), reports that the growth of bank system does not necessary contribute to improve profitability of the banking sector in Tunisia.

2.1.5 Macroeconomic Determinants

GDP - is used to account for economic environment and it is measured by real GDP growth. GDP growth varies over time but not among the banks. GDP growth is expected to have a positive impact on bank profitability according to the literature on the association between economic growth and financial sector profitability (Demirguc-Kunt and Huizinga, 1999; Bikker, and Bos, 2006; Athanasoglou et al., 2006). Accordingly, we expect a positive relationship between bank profitability and GDP development as the demand for lending is increasing (decreasing) in cyclical upswings (downswings). However, BenNaceur and Goaid, (2005) suggest that GDP growth does not tell any characteristic of the banking regulation and the advanced technology in the banking sector. By the other side, Staikouras and Wood (2003) find two of their three macroeconomic indicators, the variability of interest rate and the growth of GDP, have a negative impact, while the level of interest rate have a positive effect on bank performance.

Inflation (INF): is also one of the microeconomic determinants and used to represent the changes in the general price level or inflationary conditions in the economy and it is measured by annual

country inflation rate. Abreu and Mendes (2000), point out a negative relationship between the inflation rate and bank's profitability in European countries. Likewise Ayadi and Boujelbene (2012), report a negative effect of inflation on Tunisian bank profitability over the 1995- 2005 period. In the same way, Demirguc-Kunt and Huizinga (1999) suggest that banks with high capital ratio in developing countries tend to be less profitable in inflationary environments.

2.2 Empirical Literature

Rao&Tekeste (2012), conducted the research on the topic "Determinants of Performance of Commercial Banks in a Developing Country: Evidence from Ethiopia" employing unbalanced panel data of Ethiopian commercial banks under the period 1999/00 to 2008/09. In the study return on average asset stands for bank performance indicators, seven internal and three external factors were regressed against ROA of the banks. The finding of the study shows that the most important determinants of banks' profitability in Ethiopia are all the internal factors used in the study: equity to asset ratio, non-interest income to total income and bank size have positive and significant impact on the profitability, the loan loss reserve to total loans is found to have negative impact on profitability though it is statistically insignificant, liquidity and operational efficiency are also negatively affect the profitability of the banks. But the external factors (concentration, inflation and GDP) are found to be statistically insignificant.

My study is different from the above one since it utilized a time period of 2003-2012. Kapur and Abebaw (2012), conduct an empirical analysis on the impact of ownership structure on the performance of Ethiopian commercial banks with the sample of two public commercial banks and six private commercial banks under the period 2001 to 2008. To examine the relationship and to determine the different attributions of performance in their ownership patterns, the study used both parametric and nonparametric tests. The findings show that private sector banks had better profitability as measured by ROA and NIM than their public counterparts. Banks were significantly better in credit management, which demonstrates the efficiency in evaluating and deploying resources in good projects, than public owned banks.

The paper conducted by Ameur and Mhiri (2013), to identify the explanatory factors of banks' Performance on ten Tunisian commercial banks from 1998 to 2011 incorporate bank-specific, industry-specific and macroeconomic factors.. However, concentration and bank size have a negative and a significant effect on performance. On the other hand, the macroeconomic variables do not have a significant effect on bank performance, except inflation which seems to affect negatively bank's net interest margin. Moreover, private owned banks seem to be more profitable than state owned ones. Ongore and Gemechu (2013), used linear multiple regression model and Generalized Least Square on panel data to estimate the determinants of financial performance of commercial banks in Kenya. Their finding reveals that specific factors such as capital adequacy, asset quality and management efficiency significantly affect the performance of Kenyan commercial banks, except for liquidity variable. The relationship between bank performance and capital adequacy and management efficiency was found to be positive and for asset quality the relationship was negative. But the overall effect of macroeconomic variables was inconclusive and the role of ownership identity on the financial performance of commercial banks was insignificant. Even if it is found that GDP has negative correlation with performance indicators, the relationship is insignificant.

Azam and Siddiqui (2012), applied multiple regression technique to analyze the internal and the external determinants of Pakistan banking industry. The study, on the purpose of comparing the profitability of domestic and foreign banks and analyzing their determinants under the period 2004 to 2010 (on quarterly basis), find that foreign banks are more profitable than all domestic banks, and they have also different profitability determinants. Empirical results show that foreign banks are less affected by the macroeconomic factors of the host country than domestic banks and they have a higher profitability margin in Pakistan. They conclude that local controlled commercial banks in Pakistan are more profitable than foreign controlled ones as far as the volume of the profit is concerned which is reflected in their earnings per share but the foreign controlled commercial banks in Pakistan, as a whole are more capital efficient as compared to the local controlled commercial banks subject to few exceptions. Alkhatib, (2012), with the purpose to empirically examine the financial performance of five Palestinian commercial banks listed on Palestine securities exchange. In this paper, Financial performance has been measured by using three indicators; Internal–based performance measured by Return on Assets, Market-

based performance measured by Tobin's Q model (Price / Book value of Equity) and Economic–based performance measured by Economic Value add. The study employed the correlation and multiple regression analysis of annual time series data from 2005-2010 to capture the impact of bank size, credit risk, operational efficiency and asset management on financial performance measured by the three indicators, and to create a good-fit regression model to predict the future financial performance of these banks. The finding implies that operational efficiency and asset management individually have significant impact on ROA, when they used along with bank size and credit risk, they add significant effect on Tobin's Q and EVA.

San1 and Heng (2013), conducted the study aims to investigate the impact of bank-specific factors which include the liquidity, credit, capital, operating expenses and the size of commercial banks on their performance, which is measured by return on average assets (ROAA) and return on average equity (ROAE). The results imply that ratios employed in this study have different effects on the performance of banks in both China and Malaysia, except credit and capital ratios. Operating ratios influence performance of banks in China, but this influence is not true for Malaysian banks regardless of the measure of performance.

The study of Alper and Anbar (2011) focuses on the bank specific and macroeconomic determinants of Profitability in Commercial Bank of Turkey under the period 2002 to 2010. It uses ROA and ROE as dependent variables to examine the determinant of banks profitability. The finding the research reveals that asset size and non-interest income have a positive and significant effect on bank profitability. However, size of credit portfolio and loans under follow up have a negative and significant impact on bank profitability. With regard to macroeconomic variables, only the real interest rate affects the performance of banks positively. These results suggest that banks can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio. In addition, higher real interest rate can lead to higher bank profitability.

The Greek banks working paper investigates the bank-Specific, industry specific and macroeconomic determinants of profitability by using GMM technique to a panel data over the period 1985 to 2001 (Athanasoglou, et. al., 2005). In the study the profitability indicator is

measured by two alternatives as a dependent variables i.e. the ratio of profits to assets (ROA) and the profits to equity ratio (ROE).The results show that all bank-specific determinants, except size, affect bank profitability significantly as capital and labor productivity positive and operating expenses negative impact on profitability. The macroeconomic determinants: inflation and cyclical output also clearly affect the performance of the banking sector. Moreover, the industry specific factors: ownership and industry concentration are found insignificant. The effect of the business cycle is positively correlated to profitability only when output is above its trend. Even if this empirical framework incorporates the traditional Structure-Conduct-Performance (SCP) hypothesis, no evidence is found in support of the SCP hypothesis as the effect of industry concentration on bank profitability was found insignificant.

Other similar study on Greek banks was conducted by Alexiou and Sofoklis(2009) to examine the effects of bank-specific and macroeconomic determinants of Greek bank profitability, by assuming that the two broad sets of variables (ROA and ROE) that control bank profitability are a function of the specific sector as a whole as well as the macroeconomic environment within which the sector operates. A panel data approach was applied to six Greek banks using an empirical framework that incorporates the traditional Structure-Conduct- Performance (SCP) hypothesis. The finding suggests that most of the bank-specific determinants were significantly affect bank profitability. However, there is relatively weak relationship between size and profitability, and ambiguous picture were considered on macroeconomic factor.

Sufian and Chong (2008), look for the factors that influence the profitability of Philippines banking sector by using ROA as a dependent variables during the period 1990–2005. The empirical evidences suggest that all the bank specific determinant variables have a statistically significantly impact on bank profitability. Among them size, credit risk, and overhead expensed are negatively affect the bank profitability, whereas non-interest income and capitalization have a positive impact on it. Concerning the macroeconomic factors, the findings show that except inflation which has a negative impact on bank profitability, GDP, the growth in money supply, and the level of stock market capitalization have not significantly explained the profitability of Philippines banks.

Ana et. Al. (2011) conduct research on the topic Determinants of Bank Profitability in Croatia with twofold objectives; to provide a synthesis of relevant empirical researches on the determinants of commercial banks' profitability and to establish empirical verification of profitability determinants of Croatian banks using dynamic panel analysis under the study period 2003 to 2008 on 28 commercial banks. Return on assets (ROA) is used as a proxy indicator to measure profitability in the analysis. The result of the study reveals that higher loan growth and equity financing, stable base of deponents, prudent credit risk and market risk management as well as the growth of fee based activities are comparative advantages of banks in Croatia in achieving extraordinary levels of return on assets. On the other hand, the average interest income and the average interest expense proved to be statistically insignificant. Amanda et. al. (2013) search for the determinant of Nigerian Banks' Profitability in the case of First Bank of Nigeria Plc by applying the econometric analysis of Co-integration and Error Correction Technique using annual time series data from 1980 to 2010. The empirical result shows that bank size and cost efficiency did not significantly determine bank profitability in Nigeria. However, credit risk and capital adequacy had significantly negative effect on banks profitability both in the long-run and in the short run. Liquidity Risk which is, in the study, measured by Total Loans to Total Assets ratio and Total Loans-to-Total Bank Deposits ratio have significant negative and positive relationships with profitability respectively only in the short run. On the other hand among macroeconomic variables used in the study only money supply growth had a positively link with Nigerian bank profitability both in the long run and in the short run. However, no evidence was found for inflation rate and growth rate of real GDP determination of profitability.

2.3. Conclusions and Knowledge Gap

The empirical literatures that are discussed so far showed that, banks profitability is determined by both internal and external factors. However, Most of the literatures that are discussed so far appeared to have focused on studies that were conducted in the banking sector of different countries outside Ethiopia. Despite the fact that several studies were conducted by different researchers the literature review reveals the existence of controversial conclusions that results from different studies made so far.In the context of Ethiopia, the studies conducted by Semu (2010), Demena (2011), Abera(2012), Kebede (2014), Alemu (2015) and Turi (2015) assessed

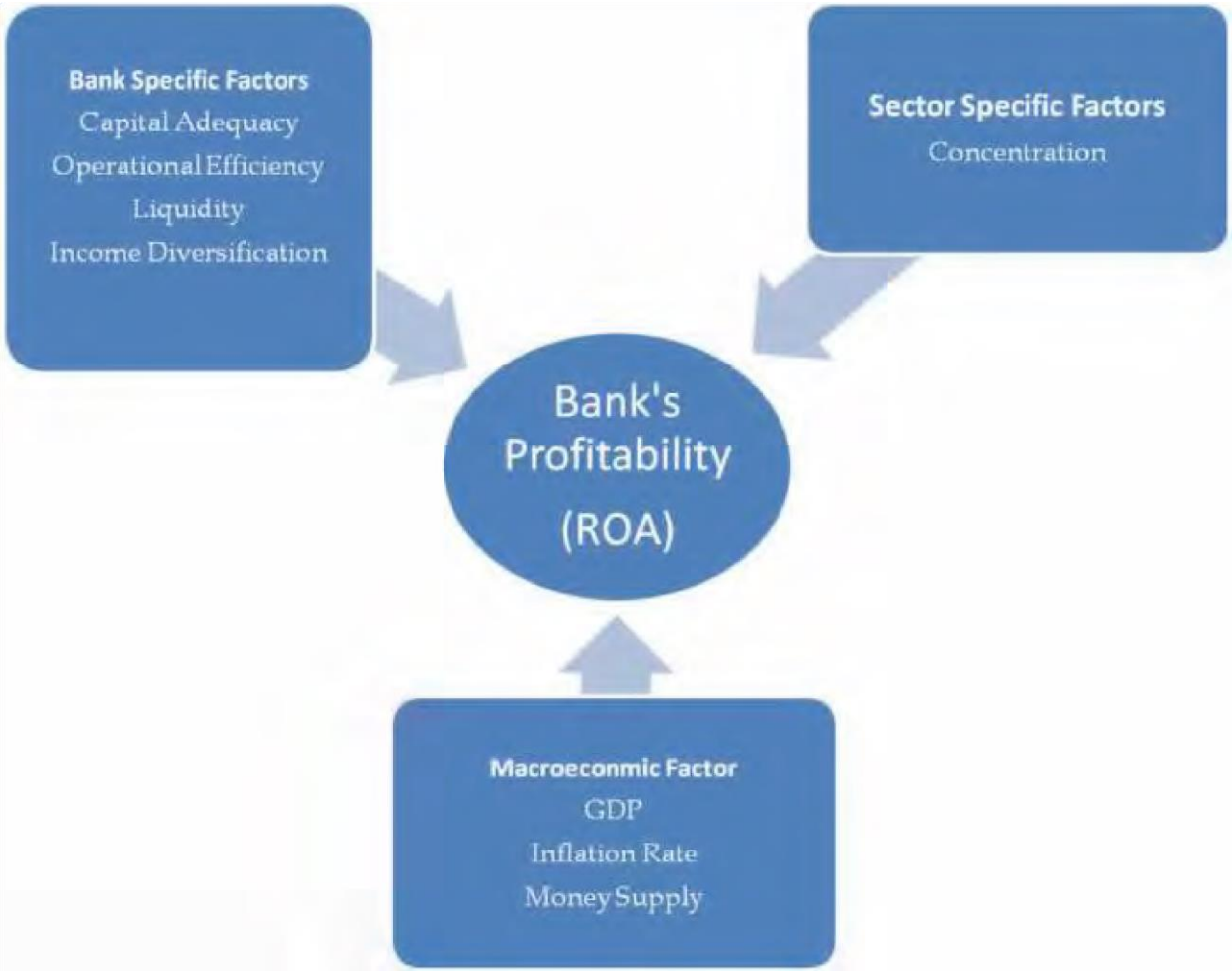
the determinants of commercial banks performance in Ethiopia by using both internal and external factors.

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

2.7. Conceptual Framework for the Study

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

Figure 1: Schematic Diagram of Conceptual model



CHAPTER THREE

Research Design and Methodology

3.1 Research design

Research design is the blue print for fulfilling research objectives and answering research questions (John A.H. et al., 2007:20-84). In other words, it is a master plan specifying the methods and procedures for collecting and analyzing the needed information. It ensures that the study will be relevant to the problem and that it uses economical procedures. The same authors discussed three types of research design, namely exploratory (emphasizes discovery of ideas and insights), descriptive (concerned with determining the frequency with which an event occurs or relationship between variables) and explanatory (concerned with determining the cause and effect relationships).

The objective of the study was to investigate the determinants of commercial banks' performance in Ethiopian banking industry. Fixed effects, and random effects model will be use after testing the validity of the assumption of the models by using the Hausman test for each three models (Brooks, 2008) by incorporating banks specific, industry specific and macroeconomic variables for time period of 11 years (2006 to 2016) on sixteen Ethiopian commercial banks.

3.2. Research approach

As noted in Creswell (2009) in terms of investigative study there are three familiar types research, quantitative, qualitative and mixed method approach. Therefore, the following discussion briefly presents the basic nature of quantitative, qualitative and mixed research approaches along with their respective merits and demerits.

Quantitative research is a means relationship among variables(Creswell2009,p.4).In quantitative research approach there are two strategies of inquiries namely, survey design and experimental design. The chief advantage of this approach is that numbers are easy to work with at a readily collected, coded, summarized and analyzed (Dunn1999, p.37).Further quantitative research approach has the advantage of being able to make generalizations, for a broader population, based on findings from the sample. Apart from of it advantages, as noted by Dunn (1999) quantitative ages. For example, the sample selected may not represent the total population and the researchers know much about the collective or average experience of research participants, but not their individual experiences (Dunn1999).

Qualitative research approach is one in which the investigator often makes knowledge claims based primarily on the multiple meanings of individual experiences ,socially and historically constructed meanings, participation in issues, collaboration or change oriented with an intent of developing a theory or pattern(Creswell2003,p.18).As noted in Sarandakos (2005,p.45cited in Yesegat2009,p.73) qualitative research approach uses strategies of inquiry such as narratives, ethnographies, grounded theory studies, or case studies. The key advantage of qualitative research design is that it discloses the richness of human experience (Lincoln and Guba1985, cited in Dunn, 1999, p.37).Moreover, qualitative research design has advantages like flexibility and emergent without being constrained by standardized procedures (LiamputtongandEzzy2005, p.204, cited in Yesegat 2009, p.74).Apart from the above mentioned advantages, qualitative research design has also its own weaknesses. As noted in Dunn (1999) the demerits of this approach includes; absence of quick response, difficulty, inefficiently, and lack of generalization among toes.

Mixed research is an approach to inquiry that combines or associates both qualitative and quantitative forms (Creswell,2009).As a major advantage, when the investigator uses this approach more about the research problem(Leedy and Ormorod,2005 cited in Semu2010,p.44).In connection to this, Greene etal.(1989,p.256,cited in yesegat,2009,p.75) also emphasized that as all methods have inherit biases and limitations, souse of only one method to

assess a given phenomenon will inevitably yield biased and limited results. Besides, as an additional merit, the approach is not limited to one method or the researcher is not committed to only one method which means the investigator is flexible

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

3.3. Data source and collection

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

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

3.4. Sampling Design and Size

The sampling technique selected for this research is purposive sampling. Particularly, the researcher used criterion sampling in which the banks service year is set as criteria and all private commercial banks that meet this criterion are selected as a sample. From all private commercial banks listed by NBE, sample of the below listed six banks that has been in business before 2005 are drawn based on the above criterion. The researcher considers that the sample size is sufficient to make sound conclusion about the population because as per NBE annual report 2014/15, out of the sixteen private

commercial banks operating in Ethiopia the six selected private commercial banks constitute 55.52% in terms of branches network and 67.18% in terms of capital. Moreover, private commercial banks in Ethiopia more or less provide the same service to their customer so the sample size is sufficient.

3.5. Definition of Variables

3.5.1 Dependent Variable

The study was examining the performance of Ethiopian commercial banks by using return on asset (ROA) as a dependent variable. ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings. As Golin (2001) points essential for financial institutions in developing economies, since it provides additional strength to withstand out (cited by Ayele, 2012) the ROA has emerged as key ratio for the evaluation of bank performance and has become the most common measure of bank performance.

ROA= Net income/ Total asset.

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

3.5.2 Independent Variable

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

Bank Specific Determinants

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

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

Ho1: There is positive relationship between the amount of capital of a bank and the bank's performance?

Operating Efficiency: The expense to income ratio is used as proxy for operating efficiency. The expense to income ratio is defined as the operating costs over total generated revenues. The major elements of operating cost are staff salaries and administrative cost. It is used as an indicator of management's ability to control costs and is expected to have a negative relation with profits, since improved management of these expenses will increase efficiency and therefore raise profits. A negative correlation is expected between the operating cost and profitability implying that higher operating cost means lower profit and vice versa.

Ho2*: *There is negative relationship between the operational efficiency of a bank and the bank's performance?

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

Ho3: There is positive/negative relationship between Liquidity of bank and the bank's performance?

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

Ho4: There is positive relationship between Income diversification of bank and the bank's performance

Industry Specific Determinant

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

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

Ho5: There is positive/negative relationship between Industry concentration level and the bank's performance?

Macroeconomic Determinants

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

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

Ho6: There is positive relationship between Real GDP growth and the bank's performance?

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

Ho7: There is positive/negative relationship between inflation and bank performance?

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

Ho8: ***There is positive relationship between money supply and bank profitability?***

3.6. Data analysis and Model Specification

The paper used panel data. This was because panel data has the advantage of giving more informative data as it consists of both the cross sectional information, which captures individual

variability, and the time series information, which captures dynamic adjustment, the collected panel data were analyzed using descriptive statistics and multiple linear regression analysis. The descriptive statistics (Mean, maximum and minimum values and standard deviations) was used to analyze the general trends of the data from 2006 to 2016. A multiple line regression model and t-static was used to determine the relative importance of each independent variable in influencing performance. For this study, the regression analysis known as OLS was used to estimate the relationship between performance and its determinants using E-views 8 econometric software package.

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

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

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

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. Results and Discussions

This chapter presents the data collected along with the results of the data analysis by grouping the analysis into three parts. These are: the descriptive statistics analysis, Correlation analysis and regression analysis.

4.1.1 Descriptive Analysis

Conducting descriptive analysis before undertaking regression analysis the researcher used to show much about the relationships between dependent and independent variables. Table 4 shows the descriptive analysis of variables under study. This analysis includes mean, minimum, maximum and standard deviation. The value of the mean reports the arithmetical average of the variables which are included in the study. The minimum and maximum values indicate the lower and the highest value of the variable. The standard deviation exhibits how much variation or dispersion exists from the mean. A low standard deviation indicates that the data points are inclined to be extremely close to the mean; while high values of standard deviation (SD) indicates that the data set is broaden out over a large range of values. The descriptive analysis that would be carried out in this section mainly depends on summary statistics presented below.

Table 4.1: Descriptive analysis

	ROA	RGDP	OE	LQ	CA	ICD
Mean	1.700175	800415.8	85.26008	0.831203	18.76710	1402.970
Median	0.435577	626977.0	60.22839	1.000000	9.680892	96.55773
Maximum	16.65000	1719491.	797.0000	1.575000	148.0000	78300.52
Minimum	0.020000	419217.8	10.00000	0.001462	8.655551	16.55000
Std. Dev.	2.468661	437858.6	125.0072	0.399717	27.05069	10095.86
Observations	60	60	60	60	60	60

Source: E-views version 8 output,

As stated in the above table 4.1, all variables comprised 60 observations (panel data of 6 commercial banks for 11 years) and the performance measure used in the study namely; ROA indicates that the Ethiopian commercial banks attained, on average a positive after tax profit over the last ten years. For the total sample of the banks in the study, the mean of ROA was 1.7% with a minimum of 0.02% and a maximum of 16.65%.That means the most profitable bank among the sampled banks in the study earned 16.65percent of profit after tax for a single birrinvested in the assets of the firm. On the other hand, the least profitable bank of the sampledbanks loss 0.02

cents for each birr invested in the assets of the firm. The data set has the standard deviation of (2.4686) which indicates that the performance variation between the selectedbanks in the study was very large. The above result shows that these banks need to optimize theutilization of their assets to increase the return on their assets.

Concerning the explanatory variables of the model there are some statistics that have to be mentioned. Capital adequacy which is measured by total capital divided by total assets has a mean value of 18.76% with a maximum and minimum value of 148% and 8.7% respectively. The mean value indicates on average 148% of the total asset is capital for sampled banks. The standard deviation statistics for capital adequacy ratio was (27.1%) which show the existence of relatively higher variation of capital to asset ratio between the selected banks compared to the variation in ROA.

The second independent variable used in the study was income diversification which is measured performance commercial bank a mean value of 1402.9% with a maximum and minimum value of 78300.52% & 16.55% respectively. ICD measure of the study indicates that the Ethiopian commercial banks have on average, a higher ICD position which was somewhat higher than the minimum requirement set by NBE. In addition, the standard deviation of ICD was (10095.86) which show there is higher variation in ICD among sampled banks.

The third independent variable used in the study was Liquidity which is measured ROA the values of mean which is equal to 0.83% with a maximum of 1.56% and minimum value of 0.001% in the study period undertaken. Standard deviation has registered the value equal to (0.3997).The fourth independent variable used in the study was operational efficiency which is measured ROA. a mean value of 85.3% with a maximum and minimum value of 797% and 10% respectively. The data set of revenue diversification has experienced standard deviation equal to (125) which shows the existence of very high variation among the Ethiopian banks in diversifying their source of revenue.

The fifth variable used in study was RGDP with a mean of value of 8004158 per birr which indicates that average RGDP in banks under study is 8004158.The minimum and maximum value of the loan in the given data set is 1719491 and 419217.8 respectively.The data set has showed the standard deviation of the loan is equal to (437858.6). Thisimplies that there is higher variation in RGDP in the sample banks understudy.

4.2 CLRM assumptions

As noted in Brooks (2008) there are some basic assumptions required to show that the estimation technique, OLS, had a number of desirable properties and hypothesis tests regarding the coefficient estimates could validly be conducted. If the Classical Linear Regression Model (CLRM) assumptions hold, then the estimators determined by OLS will have a number of desirable properties known as Best Linear Unbiased Estimators (BLUE). Therefore, for the purpose of this study, diagnostic tests are performed to ensure that whether the assumptions of the CLRM are violated or not in the model of the study. The implication of each assumption test, decision rules therein, test results and their discussion are discussed in the upcoming sub sections.

4.2.1 Heteroskedasticity test

As noted in Brooks (2008) homoskedasticity is one of the CLRM assumptions which state thatthe variance of the errors term is constant. If the errors terms do not have a constant variance,they are said to be heteroskedastic. The popular ARCH test for heteroskedasticity was used totest the presence of the heteroskedasticity. Both F-statistic and chi-square X^2 tests statisticwere used.

Table 4.2 Test of Heteroskedasticity

Heteroskedasticity Test: White

F-statistic	5.308871	Prob. F(20,39)	0.0000
Obs*R-squared	43.88179	Prob. Chi-Square(20)	0.0016
Scaled explained SS	10.98815	Prob. Chi-Square(20)	0.9465

Source: E-views version 8 output,

Accordingly, table 4.2 shows that both the F-statistic and chi-square (X^2) test give the same result that there is significant evidence for the presence of Heteroskedasticity in the models.Since the *p*-values in the observation were less than 0.05, which shows that there is evidence forthe presence of the heteroskedasticity.

4.2.2 Normality test

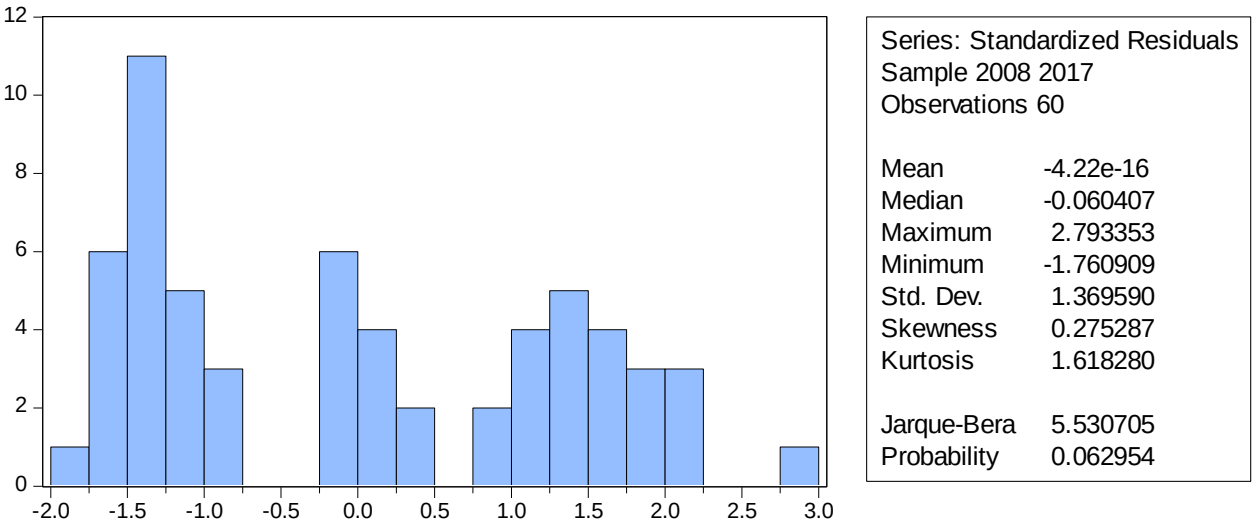
As noted in Brooks (2008) the normality assumption is required in order to conduct single orjoint hypothesis tests about the model parameters. In this study, the normality of the data waschecked with the popular Bera- Jarque test statistic by testing whether the coefficient ofskewness and the coefficient of excess kurtosis are zero and three respectively(Brooks,2008).

The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

H1: Error term is not normally distributed

Figure 4.1 normality test



Source: E-views version 8 output,

The normality tests for this study as shown in figure 4.1, the coefficient of kurtosis was close to 2 and the Bera-Jarque statistic had a P-value of 0.06 which is bigger than 0.05 so, we cannot reject the null of normality at the 5% level, Concluded that the data were consistent with a normal distribution assumption and there is no the problem of normality in the model.

4.2.3. Testing for serial correlation

Serial correlation problem exist as a result of model miss-specification or genuineautocorrelation of the model error term. In the presence of serial correlation ordinary leastsquares are no-longer BLUE (Best Linear Unbiased estimators) and R-squared may be overestimatedAccording to Brooks (2008) autocorrelation problem exist in the model when the errorterm for any observation is related to the error term of other observation. In the case ofautocorrelation problem, the estimated parameters can remain unbiased and consistent, but it isnot efficient. The result of T-test, F-test or the confidence interval will become invalid due to thevariances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of parameters in the model.

Breusch-Godfrey Serial Correlation LM Test was used to detect autocorrelation problem.

Null: Residuals are not serially correlated

Alt: Residuals are serially correlated

Decision Rule: Reject H0 if p-value greater than significance level. Otherwise, do not reject Ho

Table 4.3: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	99.81798	Prob. F(2,52)	0.0000
Obs*R-squared	47.60114	Prob. Chi-Square(2)	0.0000

Source: E-views version 8 output,

As shown in the above table 4.3, the F test and the P value of F-statistic result of the model was 0.000, which is beyond the significance level of 5%. As a result, the null hypothesis which states residuals are serially correlated is to reject at 5 percent of significant level. This implying that there is significant evidence for the presence of serial correlation in these models. In addition, the Chi-Square P-value of the models also supports the presence of serial correlation in the model. Therefore, there is serial correlation among residuals.

4.2.4 Tests for Multicollinearity

Multicollinearity assumption is concerned with the existence of a perfect linear relationship among some or all explanatory variables in the studies (Gujarati D., 2004). If multicollinearity is perfect among independent variable, their regression coefficients are indeterminate and their standard errors are infinite. If multicollinearity is less than perfect, the regression coefficients, although determinate, possess large standard error which means the coefficients cannot be estimated with great precision or accuracy.

Multicolinearity problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as Multicolinearity. There are two classes off Multicolinearity: perfect Multicolinearity and near Multicolinearity. Perfect Multicolinearity occurs when there is an exact relationship between two or more variables. In this case, it is not possible to estimate all of the coefficients in the model. Perfect Multicolinearity will usually be observed only when the same explanatory variable is inadvertently used twice in a regression. Whereas, near Multicolinearity is much more likely to occur in practice, and would arise when there was a non-negligible, but not perfect, relationship between two or more of the explanatory variables.

Therefore As stated by Kennedy (2008), multicollinearity creates problems when the correlation exceeds 0.80. Therefore, according to table below no problem of multicollinearity in this study

Table 4.4 Correlation matrixes of independent variables

	RGDP	OE	LQ	CA	ICD
RGDP	1	-0.08358937641335194	-0.05491052958503896	-0.1005369574953895	-0.03525713187364021
OE	-0.08358937641335194	1	-0.4318471854503404	0.2617223516402996	-0.02921010135108225
LQ	-0.05491052958503896	-0.4318471854503404	1	-0.6667146734216604	0.247892785297044
CA	-0.1005369574953895	0.2617223516402996	-0.6667146734216604	1	-0.00202983569754301 2
ICD	-0.03525713187364021	-0.02921010135108225	0.247892785297044	-0.00202983569754301 2	1

Source: E-views version 8 output,

4.3 Correlations analysis

Correlation is a way to index the degree to which two or more variables included in the study areassociated with or related to each other. The most widely used bi-variant correlation statistics isthe Pearson product-movement coefficient, commonly called the Pearson correlation which wasapplied in this study. Correlation coefficient between two variables lies from +1 (i.e. perfectlinear positive association) to -1 (i.e. perfect negative linear association). The sample size used inthe study is the key element to determine whether or not the correlation coefficient is differentfrom zero/statistically significant. Table 4.5 below shows the correlation coefficient between thedependent variables and independent variables.

Table 4.5 Correlation matrix of dependent and independent variables

	ROA	RGDP	OE	LQ	CA	ICD
ROA	1	-0.1314701892194901	-0.1253978455232998	0.4098375146332854	-0.1372947038960034	0.7970011677620833
RGDP	-0.1314701892194901	1	-0.08358937641335194	-0.05491052958503896	-0.1005369574953895	-0.03525713187364021
OE	-0.1253978455232998	-0.08358937641335194	1	-0.4318471854503404	0.2617223516402996	-0.02921010135108225
LQ	0.4098375146332854	-0.05491052958503896	-0.4318471854503404	1	-0.6667146734216604	0.247892785297044
CA	-0.1372947038960034	-0.1005369574953895	0.2617223516402996	-0.6667146734216604	1	-0.00202983569754301 2
ICD	0.7970011677620833	-0.03525713187364021	-0.02921010135108225	0.247892785297044	-0.00202983569754301 2	1

Source: E-views version 8 output,

From the correlation matrix presented in the above table 4.5, income diversification was themost significant variable that positively correlated with ROA which indicated by a coefficient of79.7% with ROA. Inaddition, correlation matrix also shows that RGDP, capital adequacy, ICD LQ and OEwere positive and significant correlated with profitability.

4.4. Model Selection

Brook (2008) noted that there are broadly two classes of panel estimator models that can be employed in financial researches: fixed effect models and random effect models. The simplest types of fixed effect models allows the intercept in the regression model to differ cross-section

ally but not over time, while all of the slope estimates are fixed both cross-sectionals and over time. An alternative to the fixed effect model is the random effect model, which is sometimes also known as the error components model. As with fixed effect model, the random effect approach proposes different intercept terms for each entity and again these intercepts are constant over time, with the relationships between the explanatory and explained variables assumed to be the same both cross-sectional and temporally. To identify whether the fixed effect or random effect approach is appropriate, the researcher has run Hausman specification test at five percent level (Hausman,1978).Hence, from the test performed by stating the null hypothesis as: random effects model is appropriate and the alternate hypothesis stating that: fixed effects model is appropriate. According to the result obtained from Hausman test, the null hypothesis was rejected due to the assumption that the test was significant at p-value of less than 5%. Thus, fixed effect model is the right model for this research.

Table 4.6 Hausman Test

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	145.972728		50.0000

Source: E-views version 8 output,

4.5 Results of regression analysis

This section presents the empirical findings from the econometric results on the factors affecting bank profitability in Ethiopia. The section covers the empirical regression model used in this study and the results of the regression analysis. Under the following regression outputs table the beta coefficient which indicates that each variables level of influence on the dependent variable and its sign may be negative or positive. The P-value indicates that at what percentage or precession level of each variable is significant. The R2 values indicate the explanatory power of

the model to explain dependent variables and in this study adjusted R2 value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

Empirical model: the empirical model used in the study in order to identify the determinantsof commercial banks profitability in Ethiopian was provided as follows:

ROAjt = ß0 + *ß1 (RGDP)*jt + *ß2(OE)*jt + ß3(LQ)jt + ß4(ICD)jt + ß5(CA)jt + Ut.

Table 4.7 Regression Result

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/03/21 Time: 04:29
Sample: 2008 2017
Periods included: 10
Cross-sections included: 6
Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP	-2.44E-07	2.34E-07	-1.040977	0.3030
OE	-0.000252	0.001059	-0.237569	0.8132
LQ	-0.200904	1.012720	-0.198381	0.8436
ICD	0.000177	1.26E-05	14.08106	0.0000
CA	-0.000375	0.005245	-0.071419	0.9434
C	1.842032	0.929071	1.982661	0.0530

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.922646	Mean dependent var	1.700175
Adjusted R-squared	0.906860	S.D. dependent var	2.468661
S.E. of regression	0.753407	Akaike info criterion	2.435720
Sum squared resid	27.81349	Schwarz criterion	2.819683
Log likelihood	-62.07161	Hannan-Quinn criter.	2.585909
F-statistic	58.44544	Durbin-Watson stat	1.062390
Prob(F-statistic)	0.000000		

Source: E-views version 8 outputs,

The estimation result of the operational panel regression model used in the study is presented in above table 4.7. From table 4.7 the R-squared statistics and the adjusted-R squared statistics of the model was 92.3% and 90.1% respectively is an indication that the model is a good fit. The result indicates 92.3% of variations in return on asset of Ethiopian commercial banks were

explained by independent variables included in the model that is, real growth domestic product. Operating income, liquidity, income diversification and capital adequacy from, interest,

However, the remaining 7.7% changes in return on asset of Ethiopian commercialbanks are explained by other factors that are not included in the model. the independentvariables included in the study is 0.000000 indicates that the overall model is highly significantat 1% which enhanced its reliability and validity and all the independent variables are jointlysignificant in causing variation in return on asset.Table 4.7 also shows that variables ICD were a positiverelationship with performance far as their coefficients was (0.0000).

This revealed that, there was adirect relationship between the above one independent variables and ROA. On the other handRGDP, OE, LQ and CAhave a negative coefficient of -2.44 ,-0.00001,-0.2 and -0.0004 which indicates that there was aninverse relationship between operating expense and ROA. Thus the increase of these variableswill lead to a decrease in ROA. In general as per the regression results provided in above table4.7 shows among the 5repressors used in the study one wassignificant.

Real growth domestic product

One would expect that the impact of GDP on profitability is negative and insignificant. However, it was not statistically significant even at 10% significance level (p-value = 0.3), insinuating that its influence is negligible. Moreover, the insignificant parameter indicates that the GDP does not affect Ethiopian commercial banks profitability. Thus the hypothesis that states there is a significant relationship between GDP and profitability may be rejected or data did not support the hypothesis. Referring to previous studies, the results defies logic and does not conform with earlier findings by Obamuyi (2013) and Athanasoglou et.al, (2006) which agrees on the positive association between economic growth and the performance of the financial sector but it is consistent with the finding of Krakah et.al, (2010) and Frederick (2014) who found that there was no significant relationship between GDP and banks performance.

Operating efficiency

The coefficient of the ratio of cost to income, which provides information on the efficiency of the management regarding expenses relative to income, was negative and statistically insignificant at

1% significance level (p-value= 0.8) which is in line with a prior expectation and makes the variable an important determinant of Ethiopian banks performance. This finding was consistent with many previous studies, e.g. Athanasoglou et al, (2005), Sufian et.al, (2008) and Suzuki et.al, (2011). For instance, Sufian et.al, (2008) in their work on the Philippines banks realized as cost to income ratio exhibits a negative and significant impact on Philippines banks performance. The results imply that an increase (decrease) in these expenses reduces (increases) the profits of financial institutions operated in Philippines. Coming back to this particular study, the result revealed that in the context of the Ethiopian banks like that of Sufian et.al, (2008), Athanasoglou et al, (2005) and Suzuki et.al, (2011) results, the ratio of cost to income exhibits a negative and insignificant impact on the ROA. The negative relationship between operational efficiency and performancein Ethiopia commercial banks indicates that increased efficiency i.e. reducing operating expense will result in higher performance for the banks.

Liquidity

Advances over Deposits were used as a proxy for liquidity in the model. It indicates the percentage of bank's loans funded through deposits. Liquidity measures the ability of an organization to meet its obligations and the solvency of organization (Khan & Jain, 2008). The result indicates that the liquidity variable was negative and insignificant at 1%, 5% and 10% significance level (p-value = 0.84). This implies that when a bank transforms a higher percentage of its deposit in to loans, the bank is expected to earn fewer profits. Thus, the higher the Liquidity ratio the smaller the performance of a bank and the fewer the liquidity risk for the bank. The higher amount of loans against per birr deposit decrease bank liquidity risk. The result is in line with the findings of samad (2015), who concluded in his study that liquidity positively correlates with performance.

Income diversification

The ratio of non-interest income to gross income which is a measure of diversification and business mix have a positive effect on performance, which is in agreement with a prior expectation. In addition, this variable was also statistically significant at 1% significance level (p-value = 0.000) in explaining the variability in ROA of commercial banks in Ethiopia. Thus, it was considered as a vital driver of the performance of Commercial banks in Ethiopia. That

means in the last ten years revenue generated from non-traditional activities were one of the relevant drivers of their performance in general and profitability in particular. This result was also consistent with the previous findings of Sufian et.al, (2009), Flamini et.al, (2009) and TrujilloPonce (2012).

Capital Adequacy

The coefficient of capital Adequacy which is measured by the equity to asset ratio was negative and statistically insignificant at 1%,5% and 10% significance level (p-value=0.9434). The negativecoefficient for capital weakness was in limitation of the signaling or bankruptcy costs hypotheses and in direct to the risk-return trade-off hypothesis. This is in inverse with the expectation as a bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased performance. So from the findings we can conclude that capital adequacy was one of the main affect determinants of performance banks in Ethiopia. Further, the finding was also consistent with previous studies of Kosmidou et.al, (2007), Athanasoglou et al, (2005), Trujillo-Ponce (2011), Amdemichael (2012) and Alemu (2015) and it also indicates that well capitalized Ethiopian commercial banks face lower costs of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher performance.

CHAPTER FIVE

Conclusions and Recommendations

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

5.1. Conclusions

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

A number of explanatory variables have been proposed for both categories, according to the nature and purpose of each study. Studies dealing with internal determinants employ variables such as Operating efficiency, capital, income diversification or costs etc while for external determinants, several factors have been suggested as impacting on performance and these factors can further distinguish between control variables that describe the macroeconomic environment, such as economic growth variable.

Based on the review of previous studies and banking area theories, the present study investigated the impact of some selected bank-specific, industry-specific and macroeconomic factors on the performance of the Ethiopian commercial Banks over the period of 2008 to 2017 with a sample size of six Ethiopian commercial Banks. The bank-specific factors that were used in this study are: - capital adequacy, operational efficiency, liquidity and income diversification.And one macroeconomic conditions indicator variables. The macroeconomic variables was RGDP, To comply with the objective of this research, the paper used quantitative research method. The quantitative data were mainly obtained from the banks. In specific, multiple regression analysis is adopted to measure the effect of determinants on banks performancequantitatively. The empirical findings on the impact of bank performance in Ethiopia for the sample suggest the following conclusions.

First, among macroeconomic variables the GDPvariables as expected, the result showed a negative relationship between GDP and performance with statistical insignificance. The coefficient for GDP is the first highest negative, showing that an increase in GDP will result decrease performance. This is in inverse with the expectation as a bank with a sound economic growth is enable to pursue business opportunities more not effectively and has not more time and not flexibility to deal with problems arising from unexpected losses, thus achieving decreasing performance.

The result between operational efficiency and performance showed a negative relationship with statisticalinsignificance. This shows that minimizing operating costs in Ethiopia would certainly improve the commercial banks performance while the result for income diversification showed a positive relationship between income diversification and performance as expected with strong statistical significance. The coefficient of the ratio is the positive, showing that an increase in non-interest income will result in increased performance.From the bank specific variables liquidity which showed a negative and insignificant relation between liquidity andperformance.

5.2, Recommendation

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

The explanatory powers of bank-specific variables are far more important in explaining the variability in ROA for commercial banks in Ethiopia than external variables.

The following recommendations are put forward based on the findings of the research.

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

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

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

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

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

Future Research Recommendations

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

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Appendix

Appendix –I: Tests for Heteroskedasticity: White

Heteroskedasticity Test: White

F-statistic	5.308871	Prob. F(20,39)	0.0000
Obs*R-squared	43.88179	Prob. Chi-Square(20)	0.0016
Scaled explained SS	10.98815	Prob. Chi-Square(20)	0.9465

Appendex II: Tests for autocorrelation: Breusch-Godfrey

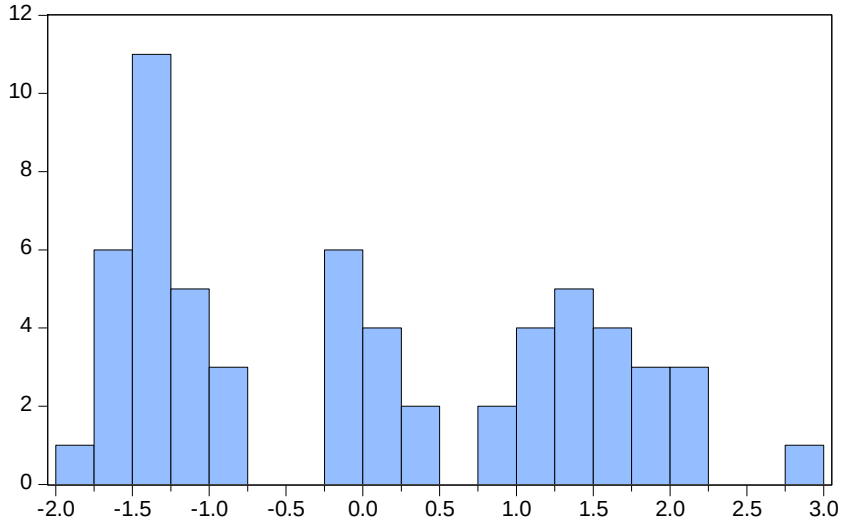
Breusch-Godfrey Serial Correlation LM Test:

F-statistic	99.81798	Prob. F(2,52)	0.0000
Obs*R-squared	47.60114	Prob. Chi-Square(2)	0.0000

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

	RGDP	OE	LQ	CA	ICD
RGDP	1	-0.08358937641335194	-0.05491052958503896	-0.1005369574953895	-0.03525713187364021
OE	-0.08358937641335194	1	-0.4318471854503404	0.2617223516402996	-0.02921010135108225
LQ	-0.05491052958503896	-0.4318471854503404	1	-0.6667146734216604	0.247892785297044
CA	-0.1005369574953895	0.2617223516402996	-0.6667146734216604	1	-0.002029835697543012
ICD	-0.03525713187364021	-0.02921010135108225	0.247892785297044	-0.002029835697543012	1

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



Series: Standardized Residuals
Sample 2008 2017
Observations 60

Mean	-4.22e-16
Median	-0.060407
Maximum	2.793353
Minimum	-1.760909
Std. Dev.	1.369590
Skewness	0.275287
Kurtosis	1.618280
Jarque-Bera	5.530705
Probability	0.062954

Appendix – V: Descriptive Analysis of dependent and independent variables

	ROA	RGDP	OE	LQ	CA	ICD
Mean	1.700175	800415.8	85.26008	0.831203	18.76710	1402.970
Median	0.435577	626977.0	60.22839	1.000000	9.680892	96.55773
Maximum	16.65000	1719491.	797.0000	1.575000	148.0000	78300.52
Minimum	0.020000	419217.8	10.00000	0.001462	8.655551	16.55000
Std. Dev.	2.468661	437858.6	125.0072	0.399717	27.05069	10095.86
Skewness	3.836183	1.075563	4.814460	-1.451125	3.502700	7.550574
Kurtosis	23.38049	2.376936	25.80080	3.618603	14.70276	58.01316
Jarque-Bera	1185.574	12.53887	1531.482	22.01432	465.0757	8136.231
Probability	0.000000	0.001893	0.000000	0.000017	0.000000	0.000000
Sum	102.0105	48024949	5115.605	49.87221	1126.026	84178.22
Sum Sq. Dev.	359.5628	1.13E+13	921981.5	9.426624	43172.65	6.01E+09
Observations	60	60	60	60	60	60

Appendix – VI: correlation Analysis of dependent and independent variables

	ROA	RGDP	OE	LQ	CA	ICD
ROA	1	-0.1314701892194901	-0.1253978455232998	0.4098375146332854	-0.1372947038960034	0.7970011677620833
RGDP	-0.1314701892194901	1	-0.08358937641335194	-0.05491052958503896	-0.1005369574953895	-0.03525713187364021
OE	-0.1253978455232998	-0.08358937641335194	1	-0.4318471854503404	0.2617223516402996	-0.02921010135108225
LQ	0.4098375146332854	-0.05491052958503896	-0.4318471854503404	1	-0.6667146734216604	0.247892785297044
CA	-0.1372947038960034	-0.1005369574953895	0.2617223516402996	-0.6667146734216604	1	-0.002029835697543012
ICD	0.7970011677620833	-0.03525713187364021	-0.02921010135108225	0.247892785297044	-0.002029835697543012	1

Appendix VII: Regression Results

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/03/21 Time: 04:29

Sample: 2008 2017
Periods included: 10
Cross-sections included: 6
Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP	-2.44E-07	2.34E-07	-1.040977	0.3030
OIL	-0.000252	0.001059	-0.237569	0.8132
ICC	-0.200904	1.012720	-0.198381	0.8436
C	0.000177	1.26E-05	14.08106	0.0000
	-0.000375	0.005245	-0.071419	0.9434
C	1.842032	0.929071	1.982661	0.0530

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.922646	Mean dependent var	1.700175
Adjusted R-squared	0.906860	S.D. dependent var	2.468661
S.E. of regression	0.753407	Akaike info criterion	2.435720
Sum squared resid	27.81349	Schwarz criterion	2.819683
Log likelihood	-62.07161	Hannan-Quinn criter.	2.585909
F-statistic	58.44544	Durbin-Watson stat	1.062390
Prob(F-statistic)	0.000000		