



**CAMEL COMPONENTS AND FINANCIAL PERFORMANCE OF
COMMERCIAL BANKS IN ETHIOPIA**

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DECLARATION

This is to certify that the thesis prepared by Saba Mebratu for the partial fulfillment of the requirements for Master of Accounting and Finance entitled “CAMEL Components and Financial Performance of Commercial Banks in Ethiopia”. This work is submitted in partial fulfillment of the requirements for the Master of Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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This research project has been submitted for presentation with my approval as the University supervisor.

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ACRONYMS AND ABBREVIATIONS

AIB	Awash International Bank
AQ	Asset Quality
BOA	Bank of Abyssinia
CAMEL	Capital Adequacy, Asset Quality, Management Efficiency, Earnings and Liquidity
CAPM	Capital Asset Pricing Model
CAR	Capital Adequacy Ratio
CBE	Commercial Bank of Ethiopia
CD	Certificate of Deposit
DB	Dashen Bank
DW	Durbin Watson
FI	Financial Institution
LQ	Liquidity
NBE	National Bank of Ethiopia
NPL	Non-Performing Loan
NPM	Net Profit Margin
PR	Press Released
ROE	Return on Equity
SAS	Statistical Analysis System
TL	Total Loan
TRWA	Total Risk Weighted Asset
UB	United Bank
VIF	Variance Inflation Factor
WB	Wegagen Bank

Abstract

The objective of this study was to analyze the CAMEL measures on financial performance of selected commercial banks in Ethiopia. The paper tried to investigate the CAMEL measures of commercial banks in Ethiopia over the period 2008-2017 for selected six commercial banks. The study used secondary panel data and econometric model using E-views software obtained from published Financial statement from National Bank of Ethiopia (NBE). The findings have been presented in the form of tables, graphs and regression equations. The coefficient of multiple determinants also indicates that 87.6% of the changes in performance (ROE) of commercial banks in Ethiopia are explained by variables incorporated in the CAMEL components. The study found that capital adequacy ratio revealed that banks with high capital to risk weighted asset will strongly enhances the profitability of the banks, the asset quality indicated strong ratio that means its more helpful to the banks in understanding the risk on the exposure of the debtors. The study also indicates that earning ability indicates how well manager make control to the asset of the bank and equity in order to get a better earning, liquidity position of the banks under the study determines how well the banks cash deposit with foreign banks and NBE to total assets have the ability to cover immediate obligations. Based on the management efficiency ratio, the study thus recommends that commercial banks in Ethiopia should also try to keep their operational cost low that affects their profits margin to low financial performance. This study recommend also that CAMEL model can be used as a representation as proxy to measure financial performances of commercial banks in Ethiopia.

Keywords: National Bank of Ethiopia, Commercial Banks, Financial Performance, CAMEL components, E-views

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The financial sector in Ethiopia is composed of the banking industry, insurance companies, microfinance institutions, saving and credit cooperatives and the informal financial sector. The banking industry accounts about 95% of the total financial sector assets, implying that the financial sector is underdeveloped, and activities that banks could perform are legally limited, which in turn contribute to lesser contestability. (Zerayehu et al., 2013)

A modern financial management defines the business of banking as the measuring, managing and accepting of the risks. With increased pressure on Banks to improve shareholder return banks have had to assume higher risk and at the same time, manage these risks to avoid losses. Recent changes in the banking environment have posed serious risk challenges for banks but has also have offered productive opportunities (Saunders and Marcia, 2007).

A commercial bank is a type of financial institution that accepts deposits, offers checking account services, makes various loans, and offers basic financial products like certificates of deposit (CDs) and savings accounts to individuals and small businesses. A commercial bank is where most people do their banking, as opposed to an investment bank (Heffernan, 2005).

Commercial banks' make money by providing loans and earning interest income from those loans. The types of loans a commercial bank can issue vary and may include mortgages, auto loans, business loans, and personal loans. A commercial bank may specialize in just one or a few types of loans. Customer deposits, such as checking accounts, savings accounts, money market accounts, and CDs, provide banks with the capital to make loans. Customers who deposit money into these accounts effectively lend money to the bank and are paid interest. However, the interest rate paid by the bank on money they borrow is less than the rate charged on money they lend.

Commercial banks decisions to lend out loans are influenced by a lot of factors such as the prevailing interest rate, the volume of deposits, the level of their domestic and foreign investment, banks liquidity ratio, prestige and public recognition to mention a few.

Credit creation is the main income generating activity for the banks. Nevertheless, this activity involves huge risks to both the lender and the borrower. The risk of a trading partner not fulfilling his or her obligation as per the contract on due date or anytime thereafter can greatly jeopardize the smooth functioning of a bank's business (Achou and Tenguh, 2008).

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period.

CAMEL rating is a financial performance evaluation system often applied to the banking industry, which is originally developed by the Uniform Financial Institutions Rating System (UFIRS). It is a composite rating system based on the financial ratios of the bank's financial statements. Accordingly, the stakeholders are expected to take necessary reactive and proactive measures towards the prosperity of the banks.

The CAMEL model is the most widely used model by researchers and the bank managers as well as the central banks have been implementing the CAMEL framework for evaluating the financial performance of banks (Baral, 2005; Dang, 2011). Dang (2011) argues that the CAMEL framework often used by scholars to proxy the internal (bank specific) factors. CAMEL refer to the portfolio of financial indexes that indicate the financial performance (health) of a firm. It stands for capital adequacy, asset quality, management efficiency, earnings ability, liquidity.

1.2 Background of the Organization

It was in 1905 that the first bank, the "Bank of Abyssinia", was established based on the agreement signed between the Ethiopian Government and the National Bank of Egypt, which was owned by the British. Its capital was 1 million shillings. According to the agreement, the bank was allowed to engage in commercial banking (selling shares, accepting deposits and effecting payments in cheques) and to issue currency notes. (Fasil et al., 2012)

Following the 1974 Revolution, on January 1, 1975 all private banks and 13 insurance companies were nationalized and along with state owned banks, placed under the coordination, supervision and control of the National Bank of Ethiopia. The three private banks, Banco Di

Roman, Banco Di Napoli and the Addis Ababa Bank S.C. were merged to form “Addis Bank.” Eventually in 1980 this bank was itself merged with the Commercial Bank of Ethiopia S.C. to form the “Commercial Bank of Ethiopia,” thereby creating a monopoly of commercial banking services in Ethiopia. Thus, from 1975 to 1994 there were four state owned banks and one state owned insurance company, i.e., the National Bank of Ethiopia (The Central Bank), the Commercial Bank of Ethiopia, the Housing and Savings Bank, the Development Bank of Ethiopia and the Ethiopian Insurance Corporation. (Fasil et al., 2012)

Currently Ethiopia has 18 commercial banks established based on the requirements of the Central bank (National Bank of Ethiopia) and all these banks are owned by Ethiopian nationals alone and no foreign banks operate in Ethiopia. National Bank of Ethiopia oversees and controls the operations of these banks. The central bank issues different regulatory and follow up instructions to all banks whenever the need arises. One of these directives that is important for this study is the “Bank Risk Management Guidelines (Revised)” (National Bank of Ethiopia: Bank Supervision Directorate, 2010).

The stage of development of the banking industry is a good reflection of the development of the economy (Misra and Aspal, 2013). To sustain the development of the economy, the performance and health of banks has to be checked and evaluated periodically. There are different approaches used by different regulatory bodies. Among those approaches, most preferred parameters used by the regulators and different scholars are CAMEL (capital adequacy, asset quality, management quality, earnings and liquidity) rating criterion to assess and evaluate the performance and financial soundness of the activities of the bank. The CAMEL supervisory criterion in banking sector is a significant and considerable improvement over the earlier criteria in terms of frequency, check, spread over and concentration (Misra and Aspal, 2013; Basel, 2011). Hence, this study intends to analyze CAMEL approach and the performance of selected commercial banks in Ethiopia.

1.3 Statement of the Problem

The banking sector’s performance is perceived as the replica of economic activities of the economy. The stage of development of the banking industry is a good reflection of the development of the economy (Misra & Aspal, 2013). Evaluation of financial performance of the banking sector is an effective measure and indicator to check the soundness of economic activities of a nation. Credit risk is the risk that obligations will not be repaid on time and fully as

expected or contracted, resulting in a financial loss or non-performing loans (Ahmed Tijjani, 2002).

One of the major problems confronting the banking industry today is the increasing incidence of loan defaults and consequent loan losses that manifested on the profitability of the banks. Consequence to increasing incidence of huge bad debts in the Nigerian banking industry, insider's abuses, managements competence have been called to question (CBN Annual Report, 1989).

In a study conducted by (Tang and Jiang, 2003) about the profitability of banking sector in Hong Kong, they found that both bank specific as well as macro-economic factors are important factors determining the performance of banks. From the samples they had selected in Hong Kong, they highlighted that macro-economic determinants, real GDP growth, inflation and interest rate had a positive effect. Operational efficiency and business diversifications, among the bank specific variables, contribute to higher Return on Assets, after controlling differences in credit quality of loans. They also enlisted that provision for bad debts and non-interest expenditures as the major factors influencing banks financial performance. In conclusion, the researcher argued that after controlling the credit quality of bank lending portfolios a more efficiently operated and diversified bank achieves higher performance.

According to Parvesh and Sanjeev (2016) assessment of financial performance of the banking sector is an efficient measure and indicator to judge the strength of financial system of an economy. The banking sector's performance is professed as the replica of economic activities performed in an economy. Sound financial health of a bank provides the assurance not only to its depositors but is equally significant for its stakeholders and economy as a whole. Therefore, efforts have been made by financial analysts and economists at regular intervals to analyze the financial strength and performance of the banks and manage it accordingly.

Bank's performance or rather solvency or insolvency has been given much attention both at the local and international level. Financial ratios are often used to measure the overall financial soundness of a bank and the quality of its management. (Githinji, 2010) argues that bank regulators use financial ratios to help evaluate a bank's performance as part of the CAMEL system.

According to Melkamu (2012), Gethun (2012) and Mekonen (2012) Ethiopian banking sector documented that credit risk and non-performing loan have been the major challenges of bank performance. Banks should now have a keen awareness of the need to identify, measure, monitor and control credit as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred (Basel committee, 2004).

The principal concern of this study is to assess to what extent of the CAMEL components of commercial banks can manage their performance. The financial performance measured by ROE in this context is viewed as the performance measure and the CAMEL components used as the explanatory variables. Therefore, profitability measures of financial performance were applied in order to provide clear evidence on the problem.

1.4 Objectives of the Study

1.4.1 General Objective

The main objective of the study is to identify the CAMEL components on explaining the financial performance of banks and its effect on the performance of commercial banks.

1.4.2 Specific Objectives

- ✓ To identify the effect of CAMEL components, on financial performance of commercial banks in Ethiopia.
- ✓ To investigate if there were any relationships between the CAMEL components and the performance of commercial banks in Ethiopia.

1.5 Research Question

In order to acquire relevant knowledge on the effect of the performance of commercial banks in Ethiopia, the study made the following research question:

- Do the CAMEL components explain the performance of commercial banks in Ethiopia?

Barr (2002) on his study, states that CAMEL rating has become a concise and indispensable tool for examiners and regulators. This rating ensures a bank's healthy conditions by reviewing different aspects of a bank based on variety of information sources such as financial statement, funding sources, macroeconomic data, budget and cash flow. Nevertheless, (Hirtle and Lopez, 1999) stress that the bank's CAMEL rating is highly confidential, and only exposed to the bank's

senior management for the purpose of projecting the business strategies, and to appropriate supervisory staff.

To answer the above question, the researcher made the following hypothesis with the expectations that banks with better result of each of the CAMEL components will have high financial performances.

With the help of secondary data of selected commercial banks, the study established and tested the following hypothesis:

Hypothesis (H0): Commercial banks which use the CAMEL components to measure their performance have better measurement systems which impacted their performance.

Hypothesis (H1): Commercial banks which use other performance measurement system than CAMEL have better measurement systems which impacted their performance.

1.6 Significance of the Study

The significance of this study is anticipated that the findings will be important for different sectors, which has high interest in the banking industry, Government, other study, etc.

The banking industry will obtain information about camel components and financial performance and the outcome of this research will particularly be important and useful to future investors in the industry and the senior management.

Besides this study also will be important to banks' credit departments and senior managers as it will provide an insight into the image of banks' financial performance towards its management efficiency and how to reduce exposure to the profitability. And the government also will obtain information on the importance of implementation of various legal frameworks in relation to performance management, developing policy papers, policy making regarding performance and other regulatory requirements of commercial banks in Ethiopia.

The study also relevant for the academicians to give information regarding CAMEL components effect on the financial performance of commercial banks in Ethiopia. The study will contribute to the general knowledge and form a basis for further research.

1.7 Scope of the Study

The study was look at the camel components and financial performance of commercial banks in Ethiopia for six selected banks which operate more than fifteen years in banking service that

means banks start operation before 2008. The study uses purposive sampling technique to select the commercial banks. The study period and financial data of commercial banks accessible financial report to be used for ten years from 2008 to 2017.

1.8 Paper Organization

Generally, this study is organized into five chapters. The literature review part of the study is presented in chapter two. The literature review section deals with the theoretical and empirical review of CAMEL components and financial performance of commercial banks and relevant theories which provides readers to understand the research topic.

Chapter three presents and describe the research methodology, sampling, data collection and analysis techniques. The study results, discussion of the data collected, and the interpretation of the findings are presented in chapter four. Finally, Chapter five presents conclusion of the result and recommendations of the study.

CHAPTER TWO

LITRATURE REVIEW

2 Introduction

As indicated in the organization section of this study, this chapter deals with various concepts in regard to the relationship between CAMEL components and financial performance of commercial banks.

2.1 Theoretical Review

A Theoretical literature review surveys books, scholarly articles, and any other sources relevant to a particular issue area of research, or theory, provides a description, summary, and critical evaluation of these works in relation to the research problem being investigated. It will contribute to a better understanding of the concept and help in assuming both knowledge and acceptance of theories that relates to CAMEL components and Financial Performance of commercial banks.

2.1.1 Financial Performance

Assessing the health of an economy can be accomplished by studying the financial performance of its banks, Hague and Sharma (2011). The financial performance of commercial banks is of great importance on its future operating activities. Financial statements (Statement of Financial Position and Statement of Comprehensive Income) obviously play a major role in a fundamental approach to security analysis. Among the items of potential interest to the analysis, financial ratios are the key parts of financial statements. The first thing to know about the financial performance is the profitability before turning to the debt and liquidity analysis. Recall that the ability of financial institutions to produce dividends and capital gains in the future is what gives stock its value. The ability to make timely interest payments does not compare with the ability of a firm to be profitable. However, once the firm's profitability has been assessed, then financial institutions can meet their current and future obligations Haim and Post (2005).

2.1.2 Effect of Credit Management on Financial Performance

Credit management is the method by which you collect and control the payments from your customers. Myers and Brealey (2003) describe credit management as methods and strategies adopted by a firm to ensure that they maintain an optimal level of credit and its effective management. It is an aspect of financial management involving credit analysis, credit rating, credit classification and credit reporting. A proper credit management will lower the capital that is locked with the debtors, and also reduces the possibility of getting into bad debts. According to Edwards (1993), unless a seller has built into his selling price additional costs for late payment or is successful in recovering those costs by way of interest charged, then any overdue account will affect his profit. In some competitive markets, companies can be tempted by the prospects of increased business if additional credit is given, but unless it can be certain that additional profits from increased sales will outweigh the increased costs of credit, or said costs can be recovered through higher prices, then the practice is fraught with danger. Most companies can readily see losses incurred by bad debts, customers going into liquidation, receivership or bankruptcy. The writing-off of bad debt losses visibly reduces the Profit and Loss Account. The interest cost of late payment is less visible and can go unnoticed as a cost effect. It is infrequently measured separately because it is mixed in with the total bank charges for all activities. The total bank interest is also reduced by the borrowing cost saved by paying bills late. Credit managers can measure this interest cost separately for debtors, and the results can be seen by many as startling because the cost of waiting for payment beyond terms is usually ten times the cost of bad debt losses. Effective management of accounts receivables involves designing and documenting a credit policy. Many entities face liquidity and inadequate working capital problems due to lax credit standards and inappropriate credit policies. According to Pike and Neale (1999), a sound credit policy is the blueprint for how the company communicates with and treats its most valuable asset, the customers. Scheufler (2002) proposes that a credit policy creates a common set of goals for the organization and recognizes the credit and collection department as an important contributor to the organization's strategies.

If the credit policy is correctly formulated, carried out and well understood at all levels of the banking institutions, it allows management to maintain proper standards of the bank loans to avoid unnecessary risks and correctly assess the opportunities for business development.

2.1.3 Determinants of Financial Performance

The financial performance of commercial banks is of great importance on its future operating activities. Financial statements (Statement of Financial Position and Statement of Comprehensive Income) obviously play a major role in a fundamental approach to security analysis. Among the items of potential interest to the analysis, financial ratios are the key parts of financial statements.

The first thing to know about the financial performance is the profitability before turning to the debt and liquidity analysis. Recall that the ability of financial institutions to produce dividends and capital gains in the future is what gives stock its value. The ability to make timely interest payments does not compare with the ability of a firm to be profitable. However, once the firm's profitability has been assessed, then financial institutions can meet their current and future obligations (Haim and Post, 2005). Profitability ratios typically used in commercial banking are ROE (Return- on- equity) which is probably the most important indicator of a bank's profitability and growth potential. It is the percentage return to shareholders. ROA (Return- on- Assets), which indicates how much net income is generated per dollar of asset and NPM (Net profit margin) which is the net interest margin and measures the net interest income relative to the bank's total, average or earnings asset. It measures the bank's spread per dollar of asset. High NPM suggests that the difference between deposit rates and loan (+ other interest earnings assets) rates are high which makes stable the banking sector and vice versa. However, a higher net profit margin could reflect riskier lending practices associated with substantial loan loss provisions and could be an indication of inefficiency in the banking sector. NPM has been falling in many banking markets reflecting increased competition in the deposits and loan markets Casu (2006).

The financial performance of banks is expressed in terms of profitability and the profitability has no meaning except in the sense of an increase of net asset. Profitability is a company's ability to earn a reasonable profit on the owner's investment (Warren E. Buffett, 2005). Most organizations exist is to earn profit and profitability ratios show a company's overall efficiency and performance. We can divide profitability ratios into parts: Profit margin and returns. Ratios that show margins represent the firm's ability to translate sales dollars into profits at various stages of measurement. Ratios that show returns represent the firm's ability to measure the

overall efficiency of the firm in generating returns for its shareholders Bessis (2005). The most popular profitability measurements are: Profit margin on sale, return on investment ratios, and return on equity.

In accordance with the study by Waymond (2007), Profitability ratios are often used in a high stream as the indicators of credit analysis in banks, since profitability is associated with the results of management performance. Measuring profitability is the most important measure of the success of the business (Mishkin, 2002).

A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Increasing profitability is one of the most important tasks of the business managers; these ones look for the way to improve profitability.

2.1.4 Markowitz portfolio theory

The author of the modern portfolio theory is Harry Markowitz who introduced the analysis of the portfolios of investments in his article “Portfolio Selection” published in the Journal of Finance in 1952. The new approach presented in this article included portfolio formation by considering the expected rate of return and risk of individual stocks and, crucially, their interrelationship as measured by correlation. The diversification plays a very important role in the modern portfolio theory. Markowitz approach is viewed as a single period approach: at the beginning of the period, the investor must make a decision in what particular securities to invest and hold these securities until the end of the period. Because a portfolio is a collection of securities, this decision is equivalent to selecting an optimal portfolio from a set of possible portfolios. Markowitz portfolio theory is a theory mainly used by investors for selecting portfolio based on return and risk tradeoff. The efficient set theorem has been used to evaluate the tradeoff between risk and return. Efficient set of portfolios involves the portfolios that the investor will find optimal ones. These portfolios are lying on the “northwest boundary” of the feasible set and is called an efficient frontier. The efficient frontier can be described by the curve in the risk-return space with the highest expected rates of return for each level of risk. The portfolio theory integrates the process of efficient portfolio formation to the pricing of individual assets. It explains that some sources of risk associated with individual assets can be eliminated or diversified away by holding a proper combination of assets (Bodie et al., 1999).

The modern portfolio theory dictates that a Financial Institute (FI) manager holds widely traded loans and bonds as assets or, alternatively, can calculate loan or bond returns, portfolio diversification models can be used to measure and control the FI's aggregate credit risk exposure. Despite the nontraded aspect of many loans, a great deal of recent research has gone into developing modern portfolio theory models for loans. Even if modern portfolio theory has been used for loans, direct application of modern portfolio theory is often difficult for FIs lacking information on market prices of assets because many of the assets—such as loans—are not bought and sold in established markets.

However, sufficient loan volume data may be available to allow managers to construct a modified or partial application of Modern Portfolio Theory to analyze the overall concentration or credit risk exposure of the FI. Such loan volume data include commercial bank calls reports, data on shared national credits and commercial databases.

These data therefore provide market benchmarks against which an individual FI can compare its own internal allocations of loans across major lending sectors such as real estate, commercial and industrial. For example, the Shared National Credit (SNC) database provides a market benchmark of the allocation of loans across various industries or borrowers Antony Saunders, (2008).

The theory poses a number of gaps; the initial intent by Markowitz was to address the importance of investment portfolio for investors to spread risk when investing and not management of loan portfolio in banks. Some of the issues not addressed by the theory include; how banks can form a portfolio of loans that minimize risk and maximize return. It does not outline ways of determining a risk-free portfolio. In addition, the theory does not address various risks that are faced by banks when managing a loan portfolio. Therefore, the theory cannot apply when managing credit in banks.

2.1.5 Asymmetric Information Theory

Information Asymmetry refers to a situation where enterprise owners or manager know more about the risks facing their business, than do the lenders (Eppy, 2005). Information asymmetries arise when gaining information on the characteristics or behavior of the borrower and it's costly for the financial institution. Information asymmetries generate problems of allocation of loans to

borrowers with undesirable characteristics such as a high level of risk or inability to take advantage of the loan (Lown & Morgan, 2003). The theory describes a situation in which all parties involved in an undertaking do not know relevant information. In a debt market, information asymmetry arises when a borrower who takes a loan usually has better information about the potential risks and returns associated with an enterprise for which the funds are earmarked. The lender on the other hand does not have sufficient information concerning the borrower (Edwards and Turnbull, 1994).

Binks et al., (1992) point out that perceived information asymmetry possesses two problems for the banks, moral hazard (monitoring entrepreneurial behavior) and adverse selection (making errors in lending decisions). Banks will find it difficult to overcome these problems because it is not economical to devote resources to appraisal and monitoring where lending is of relatively small amounts. This is because data needed to screen credit applications and to monitor borrowers are not freely available to banks.

Bankers face a situation of information asymmetry when assessing lending applications (Binks and Ennew, 1996). The information required to assess the competence and commitment of the entrepreneur, and the prospects of the business is either not available, uneconomic to obtain or difficult to interpret. This creates two types of risks for the Banker (Deakins, 1999).

2.1.6 Transaction Cost Theory

First developed by (Schwartz, 1974), this theory conjectures that suppliers may have an advantage over traditional lenders in checking the real financial situation or the credit worthiness of their clients. Suppliers also have a better ability to monitor and force repayment of the credit. All these superiorities may give suppliers a cost advantage when compared with financial institutions.

Three sources of cost advantage were classified by (Petersen and Rajan, 1997) as follows: information acquisition, controlling the buyer and salvaging value from existing assets. The first source of cost advantage can be explained by the fact that sellers can get information about buyers faster and at lower cost because it is obtained in the normal course of business. That is, the frequency and the amount of the buyer's orders give suppliers an idea of the client's situation; the buyer's rejection of discounts for early payment may serve to alert the supplier of a

weakening in the credit-worthiness of the buyer, and sellers usually visit customers more often than financial institutions do.

2.1.7 The Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) was first developed by (Sharpe 1964) and (Lintner 1965). Sharpe and Lintner version of CAPM was based on the one period mean variance portfolio theory of Markowitz. The Markowitz assumes that investors are risk averse and only care about risk (variance) and return (mean) of one period investment return. Therefore, investors chose efficient portfolio, meaning that they either maximize the expected return, giving a certain variance of portfolio return or minimize the variance given a certain expected return. The Capital Asset Pricing Model is established in four basic assumptions. First, investors are risk averse and evaluate their investment portfolios solely in terms of expected return and standard deviation of return measured over the same single holding period. Second, capital markets are perfect in several senses: all assets are infinitely divisible; there are no transactions costs, short selling restrictions or taxes; information is costless and available to everyone; and all investors can borrow and lend at the risk-free rate. Third, investors all have access to the same investment opportunities. Fourth, investors all make the same estimates of individual asset expected returns, standard deviations of return and the correlations among asset returns.

The Capital Asset Pricing Model mainly deals from the investor's point of view and evaluate the systematic risks that can be compared with other assets in the market. So, using this measure of risk can theoretically allow investors to improve their portfolios and managers to find their required rate of return.

2.1.8 Components of CAMEL Rating System

2.1.8.1 Capital Adequacy

The dimension of capital adequacy is an important factor to help the bank in understanding the shock attractive capability during risk. In this study, capital adequacy is measured by using the equity to total risk weighted asset ratio (Vong & Chan, 2009). That means, capital adequacy enables a bank to meet any financial unexpected condition due to credit risk, market risk, interest rate risk. Capital adequacy protects the interest of depositors of a bank.

2.1.8.2 Asset Quality

The dimension of asset quality is an important factor to help the bank in understanding the risk on the exposure of the debtors. In this paper, this parameter is measured by the provision for loan loss reserve to total loan ratio (Merchant, 2012). This ratio assures to cover the bad and doubtful loans of the bank. This parameter will benefit the bank in understanding the amount of funds that have been reserved by the banks in the event of bad investments. All banks maintain loan loss allowances to cover estimated potential losses in their loan portfolios. As the aftereffects of the subprime crisis have subsided, the allowance for loan losses for the industry have exhibited a declining trend. As the asset quality improves, banks are setting aside less allowance for potential defaults. Improved asset quality means fewer charge-offs and higher profits for banks. The banking sector's asset quality indicators are generally moving in the right direction Baral, (2005).

2.1.8.3 Management Efficiency

Management efficiency reflects the management soundness of a bank. The management acts as a safeguard to operate the bank in a smooth and decent manner and is called excellence management or skillful management, whenever it controls its cost and increases productivity, ultimately achieving higher profits. According to Paramasivan, (2008) this parameter is measured by non-interest expenses to net income ratio. Since a bank's operating expenses are in the numerator and its revenue is in the denominator, a lower efficiency ratio means that a bank is operating better. A general rule of thumb is that a ratio of 50% is the maximum optimal efficiency ratio.

2.1.8.4 Earnings

Earning is an important parameter to measure the financial performance of an organization. Earning quality mainly measures the profitability and productivity of the bank, explains the growth and sustainability of future earnings capacity. In the same way, bank depends on its earning to perform the activities like funding dividends, maintaining adequate capital levels, providing for opportunities for investment for bank to grow, strategies for engaging in new activities and maintaining the competitive outlook. Here earning is determined by return on asset.

2.1.8.5 Liquidity

Liquidity ratio in a bank measures the ability to pay its current obligations (Hazzi & Kilani, 2013). For having sound banking operations, it needs to have liquidity solvency. If any bank faces liquidity crisis, bank can't meet up its short-term obligations. Liquidity crisis seems to be a curse to the image of banks. So, it is a prime concern to banks. Cash and investments are the most liquid assets of a bank. An adequate liquidity position means a situation, where institution can obtain sufficient funds, either by rising liabilities or by converting its assets quickly at a reasonable cost. Here liquidity performance is measured by cash deposits by other banks and NBE to total asset ratio.

2.2 Empirical Review

CAMEL components are good performance measurement of commercial banks; therefore, various researchers have examined the performance of commercial banks in varying dimensions.

Kolapo et al (2012) executed a panel model analysis to estimate the determinants of the profit function on banks performance. The result showed that the effect of credit risk on bank performance measured by the Return on Assets of banks is cross-sectional invariant. That is the effect is similar across banks in Nigeria, though the degree to which individual banks are affected is not captured by the method of analysis employed in the study. A 100 percent increase in non-performing loan reduces profitability (ROA) by about 6.2 percent, a 100 percent increase in loan loss provision also reduces profitability by about 0.65percent while a 100 percent increase in total loan and advances increase profitability by about 9.6 percent.

Jackson, (2011) in his study found that there is a strong impact between the CAMEL components on the financial performance of commercial banks with the R: values being lowest at 0.594 in 2007 and highest at 0.943 in 2009 implying that in 2007 CAMEL components could explain 59.4 percent variations in financial performance and 94.3 percent variations in financial performance in 2009. The study also established that capital adequacy, asset quality, management efficiency and liquidity had weak relationship with financial performance (ROE) whereas earnings had a strong relationship with financial performance. This study concludes that CAMEL model can be used as a proxy for credit risk management. The study thus recommends that commercial banks should also try to keep their operational cost low as this negates their profits margin thus leading

to low financial performance. This is depicted by the strong effect of earnings on financial performance.

Ugirase (2013) in her study found out that credit risk identification, credit scoring mechanism and credit analysis and assessment are good predictors of the model consequently those three indicators used of credit risk management have shown a positive relationship with the financial performance of commercial banks in Rwanda. The study has also concluded that the client has defaulted on loan payment after more than one year late and after using supervision on one to one basis. The study found the approaches that are used by the banks in screening and risk analysis before awarding credit to clients. From the findings, the study has concluded capacity/ competition and conditions are the approaches mostly used in screening and risk analysis. Finally, the study concludes that there were positive effects of credit risk management on financial performance of Rwanda commercial banks.

The study of Jane et al (2016) executed panel data techniques of fixed effects estimation and generalized method of moments (GMM) were used to purge time-invariant unobserved firm specific effects and to mitigate potential endogeneity problems. The results of the study show that credit risk has a negative and significant relationship with bank profitability. And also, poor asset quality or high non-performing loans to total asset is related to poor bank performance both in short run and long run. Based on the study findings, it is recommended that management of commercial banks in Kenya should enhance their capacity in credit analysis and loan administration. They recommend that clear credit policies and lending guidelines should be established.

Sujeewa (2015) in his study used panel data of a five-year period from 2009 to 2013 from the selected banks were used to examine the relationship between credit risk and performances and the secondary data were obtained from various sources such as Annual Reports of the selected commercial banks, relevant articles, books and magazines etc. The Return on Assets (ROA) is used as performance indicator and Loan provision to Total (LP/TL), Loan Provision to Non-Performing Loans (LP/NPL), Loan Provision to Total Assets (LP/TA) and Non-Performing Loans/ Total Loans (NPL/TL) were used as indicators of credit risk. Further, a regression model was used to establish the relationship between amounts of loan as well as non-performing loans and profitability during the period of study by using E-views software. The result of the study

shows that non-performing loans and provisions have an adverse impact on the profitability. Therefore, the study recommended the banks to implement an effective tools and techniques to reduce the credit risk management.

A study conducted by Sulieman (2015) the research revealed that the credit risk management effects on financial performance of the Jordanian commercial banks as measured by ROA and ROE. The research concludes that the credit risk management indicators considered in this research have a significant effect on financial performance of the Jordanian commercial banks. Based his findings, the researcher recommends banks to improve their credit risk management to achieve more profits, in that banks should take into consideration, the indicators of Non-performing loans/Gross loans, Provision for facilities loss/Net facilities and the leverage ratio that were found significant in determining credit risk management. Also, banks should establish adequate credit risk management policies by imposing strict credit estimation before granting loans to customers, and banks in designing an effective credit risk management system, need to establish a suitable credit risk environment; operating under a sound credit granting process, maintaining an appropriate credit administration that involves monitoring, processing as well as enough controls over credit risk, and banks need to put and devise strategies that will not only limit the banks exposition to credit risk but will develop performance and competitiveness of the banks.

The main purpose of Fan Li et al (2014) study is to investigate if there is a relationship between credit risk management and profitability of commercial banks in Europe. They also aim to investigate if the relationship is stable or fluctuating. In the research model, ROE and ROA are defined as proxies of profitability while NPLR and CAR are defined as proxies of credit risk management. The research collects data from the largest 47 commercial banks in Europe from 2007 to 2012 and formulates four hypotheses which are related to the research question. A series of statistical tests are performed in order to test if the relationship exists. Other statistical tests are performed to investigate if the relationship is stable or not. The findings reveal that credit risk management does have positive effects on profitability of commercial banks. Between the two proxies of credit risk management, NPLR has a significant effect on the both ROE and ROA while CAR has an insignificant effect on both ROE and ROA.

The objective of Engdawork (2014) study is to empirically examine the quantitative effect of credit risk on the performance of commercial banks in Ethiopia, considering variables related to lending activities, over the period of 5 years (2008-2012). The empirical investigation uses the accounting measure of Return on Assets (ROA), which is the dependent variable, to represent Banks' performance. The study fundamentally involves both descriptive and econometrics techniques. The econometrics method used in the study basically involves assessing the impact of selected internal variables, the provision to total loans, loan to total asset, credit administration (cost to total loans) and natural logarithm of total asset (Economies of scale), on the performance of the banking sector. To this end multiple linear regression model is used to measure the relative weighting of the independent variables above on a dependent variable. Basic descriptive statistics was applied for trend analysis. A non- probability method in the form of judgmental sampling technique is employed in selecting the eight Banks into the sample and the data are sourced from the Annual Reports of the same Banks which account for over eighty percent of the total loan and advance in the industry. The study finds that the selected variables: the provision to total loans, loan to total asset, credit administration (cost to total loans) and Size (Economies of scale) have significant effect on the performance of Banks.

Sahlemichael, (2009) study found that there are commercial banks involved in the banking business without having even a credit management department and credit risk management policies. The research found credit risk as the most common and frequently occurring risk in commercial banks. Lack of coordination among lending banks, failure of due diligence and independent monitoring are the major reasons given by the banks for the frequency of the credit risk occurrence in their banks. The research found that only 17% of the banks from the sample had credit risk management department, which is independent from the loan origination function. Most surprisingly the researcher mentioned that there were banks who do not have written credit risk policy. The researcher clearly indicated that 67% the sampled banks didn't effectively communicate their credit risk strategy and policy throughout their organization. The researcher indicated that none of the banks has used the popular credit evaluation techniques like KMV's Portfolio Manager, Altman's Z score model, J.P. Morgan credit matrix, etc.

He found that there is a significant relationship between bank performance (in terms of profitability) and credit risk management (in terms of loan performance). Better credit risk

management results in better bank performance. Thus, it is of crucial importance that banks practice prudent credit risk management and safeguarding the assets of the banks and protect the investors' interests.

The study made by Misker (2015) found that the credit risk which is measured by nonperforming loan ratio had a significant inverse impact on banks financial performance and capital adequacy also same impact on profitability. In addition, loan to deposit ratio and bank size have a positive significant impact on banks financial performance. According to the regression results, the findings indicated that bank credit risk management measured in terms of NPLR has negative and statistically significant impact on ROE. This result is unusual since one would expect a riskier business will have the bigger return. This implies that banks can make a profit as far as they can minimize the credit risk. The study used a secondary data for eight banks which stayed in the industry more than eleven years among nineteen banks which is functional at the moment in Ethiopia banking industry. Data to do the analysis is obtained from banks annual report, National Bank annual report and MoFED.

According to Tegene (2018) study that to empirically examine the impact of credit risk on profitability of private commercial banks in Ethiopia. Considering variables related to lending activities to determine bank specific, industry specific and macro-economic factors that affect banks financial performance over the period of 14 years (2003-2016). The empirical investigation uses the accounting measure of Return on Equity (ROE), which is the explained variable, to represent Banks' performance while nonperforming loan ratio, capital adequacy ratio, cost per loan asset ratio, bank size, and loan and advance to deposit ratio, inflation and GDP have been taken as explanatory variables. Secondary data are used for six banks which stayed in the industry more than fourteen years among sixteen private banks which are functional at the moment in Ethiopian banking industry. Data used for this analysis is obtained from banks' annual reports, National Bank annual reports and Ministry of Finance and Economic Development and the correlation and multiple regression analysis is done with fixed effect model and EView 7 software used to regress the data. The study concludes that, bank specific factors and macroeconomic factor GDP have a significant impact on banks profitability while external factors inflation and interest rate spread had no significant impact on banks profitability.

Dereje (2018) study is done to empirically examine the quantitative effect of credit risk on the performance of commercial banks in Ethiopia, considering variables related to lending activities, over the period of nine years (2008-2016). The empirical investigation uses the accounting measure of Return on Assets (ROA), which is the dependent variable, to represent Banks' performance. The study involves both descriptive and econometrics techniques. The econometrics method used in the study involves assessing the effect of selected internal variables, the non-performing loan, capital adequacy, liquidity, loan growth, cost to income ratio and natural logarithm of total asset (Economies of scale), and macro-economic variables: Gross domestic products (GDP) and Inflation on the performance of the banking sector. To this end multiple linear regression model is used to measure the relative weighting of the independent variables above on the banks performance (ROA). In his study basic descriptive statistics was applied for trend analysis, a non- probability method in the form of judgmental sampling technique is employed in selecting the eight Banks into the sample and the data are sourced from the annual reports of the same banks which account for over eighty percent of the total loan and advance in the industry. The study finds that the selected variables: the non-performing loans, capital adequacy, liquidity, cost to income ratio credit administration and Size (Economies of scale) have significant effect on the performance of private banks.

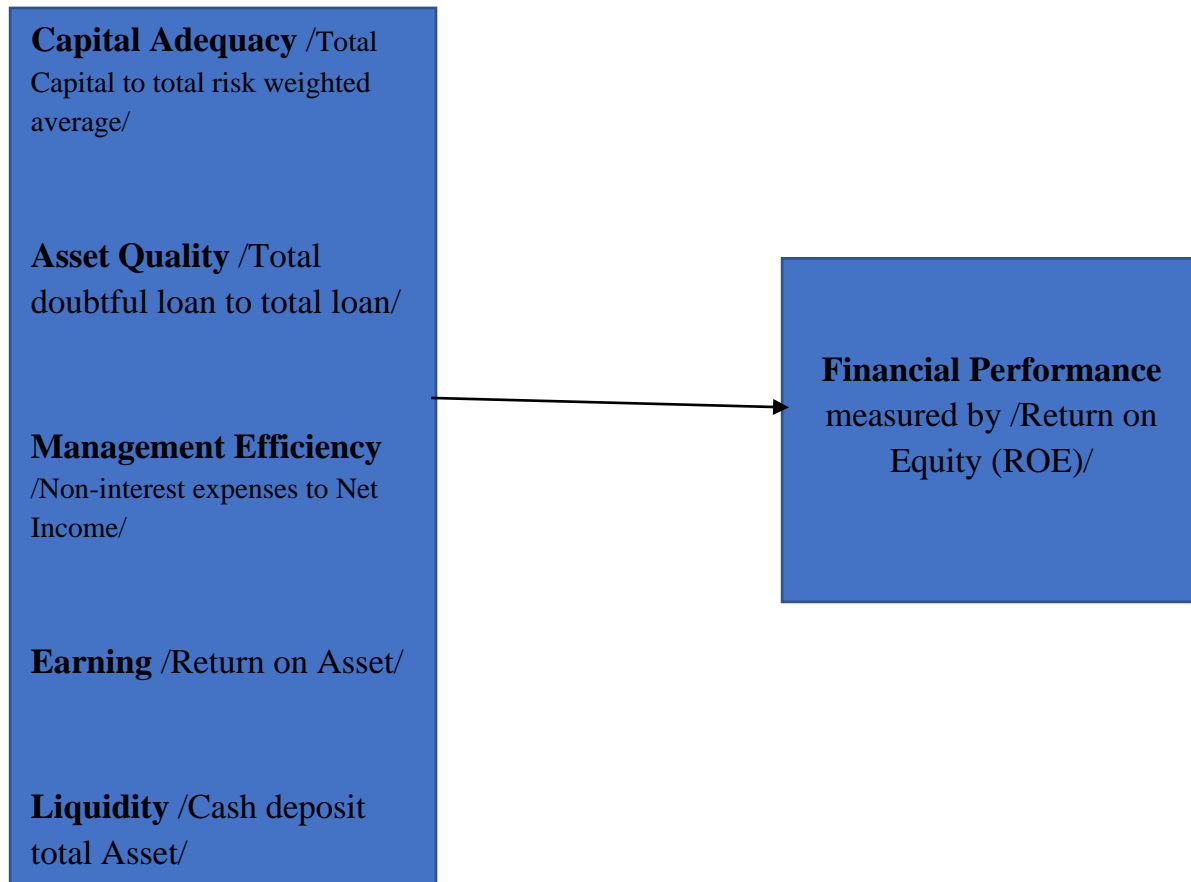
2.3 Conceptual Framework

An illustration of the key variables and their interconnections were diagrammatically shown in the figure below. The figure indicated the adopted conceptual framework showing the variables of the study.

Figure 2.1 Conceptual Framework

Independent Variables

Dependent Variable



Source: based on Mulualem (2015)

CHAPTER THREE

RESEARCH METHODOLOGY

3 Introduction

This chapter deals with how the study conducted in order to achieve the stated objectives and it present the research design and methodology that used to carry out the research. It presents the research design, the population, and sample selection, sampling procedure, and research instruments, methods of data analysis and data collection and limitations encountered during the research process.

3.1 Research Design

The research design as the outline plan or scheme that is used to generate answers to the research problems, it is basically the structure and plan of investigation. The study used explanatory research design. Explanatory research seeks to establish factors associated with certain occurrences, outcomes, conditions or types of behavior. This is deemed appropriate because the study has involved in depth a study of CAMEL components and financial performance of selected commercial banks in Ethiopia. Which helped the study in describing the state of the real current situation of commercial banks so, explanatory study was undertaken in order to establish and be able to describe the characteristics of the variables of interest carried out in the study.

The study was look at the camel components and financial performance of commercial banks in Ethiopia for six selected banks which operate more than fifteen years in banking service that means banks start operation before 2008. The study uses purposive sampling technique to select the commercial banks. The study period and financial data of commercial banks accessible financial report to be used for ten years from 2008 to 2017.

3.2 Population and Sample

The population and sample of this study used commercial Banks registered by National Bank of Ethiopia (NBE) which is the controller of all banks in Ethiopia. The target population for the purpose of the study were selected using purposive sampling, commercial Banks in Ethiopia which are senior and aged banks having above 15 years' experience i.e. the bank start operation before 2008 selection is done following the historical time formation and accessible financial

report of banks. The six commercial banks are: Commercial Bank of Ethiopia /CBE/, Awash International Bank /AIB/, Dashen Bank /DB/, Bank of Abyssinia /BOA/, Wegagen Bank /WB/ and Nib Bank /NB/ which are selected from the eighteen commercial banks in Ethiopia for ten years period from 2008 to 2017 were considered.

3.3 Data Collection

The study was employed secondary data collection methods. Secondary data for the study were collected from published Financial Reports of Commercial Banks in Ethiopia which are available with in the National Bank of Ethiopia (NBE).

3.4 Data Analysis

Data analysis aims at fulfilling the research objectives and provided answers to the research questions. For the collected data to be understood by the users easily, it needs to be analyzed. The study used quantitative techniques in analyzing the data. The data analysis method was used based on the Pearson Correlation analysis and multiple regression model. Comparing and analyzing the research findings, conclusions were drawn on the effect of CAMEL components on the financial Performance of Commercial Banks in Ethiopia. The financial information has been translated into form of percentages by using profitability ratios approach, tables also used to more illustrate a clear financial image. Finally, and after comparing all findings the study wrote conclusions on the CAMEL components and Performance of Commercial Banks in Ethiopia.

3.5 Model Specification

Multiple regression of financial performance versus CAMEL components was applied to establish the effect between variables. The model treats financial performance of commercial banks as dependent variable while the independent variable CAMEL components. The dependent variable which is financial performance measured by Return on Equity (ROE) and the independent variables were the CAMEL components which was measured by the ratio of Total Capital (TC) to Total Risk Weighted Assets (TRWA), Asset Quality was measured by total doubtful loan to total loans , Management Efficiency was measured by the Non-Interest Expense to Net Income, Earnings was measured by the Return On Asset (ROA) and Liquidity was measured by the Cash Deposits with other banks and National Bank of Ethiopia to Total Assets Jackson, 2011). The data used to enable the study to use a panel data model which is deemed to

have advantages over cross sectional and time series data methodology. As Brooks, (2008) stated the advantages of using panel data set it can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time series or pure cross-sectional data alone. Therefore, the general models which incorporate all of the variables to test the hypotheses of the study were Brooks, (2008):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where: Y = Dependent Variable (ROE)

β_1 , β_2 , β_3 , β_4 , and β_5 represent the coefficient that infer the change to the dependent variable ROE

β_0 = Constant term

X_1 = Capital Adequacy

X_2 = Asset Quality

X_3 = Management Efficiency

X_4 = Earnings

X_5 = Liquidity and

ϵ = Error term

In order to decide whether the model proposed in the study is appropriate and fulfill the assumption of classical linear regression model (CLRM) different diagnostic tests conducted i.e., Normality, heteroscedasticity, autocorrelation, multicollinearity

Normality- The Classical Linear Regression Model (CLRM) assumes that the error term is normally distributed with the mean of error being zero as positive error will offset the negative error. The normality of error term can be examined through informal way which is using the graph to detect the pattern of the residual or the formal way is the Jarque-Bera test statistics. A normal distribution is not skewed and is defined to have a coefficient of kurtosis of near 3 Brooks, (2008). One of the most commonly applied tests for normality; the Bera-Jarque formalizes these ideas by testing whether the coefficient of Skewness is zero and the coefficient of excess kurtosis is three. Brooks, (2008) Also states that, if the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant at 5% significant level.

Heteroscedasticity is the econometric problem where there is omission of reasonable independent variable that originally should be included into the model. It occurs when the variance of error term is not constant across the number of observations. The researchers have to make sure that the model is free from heteroscedasticity to obtain a precise and interpretable result. A hypothesis test is carried out using EViews with Breusch-Pagan test and p-value is obtained to detect the heteroscedasticity problem. If the obtained p-value more than 5% significance level, it implies that the model does not have heteroscedasticity problem. H₀: There is no Heteroscedasticity problem in the model. H₁: There is Heteroscedasticity problem in the model. Decision Rule: Reject H₀ if p-value greater than significance level. Otherwise, do not reject H₀ Brooks, (2008).

Autocorrelation- Autocorrelation, also known a serial correlation or cross-autocorrelation, is the cross-correlation of a signal with itself at different points in time. It is the similarity between observations as a function of the time lag between them. It is a mathematical tool for finding repeating patterns, such as the presence of a periodic signal obscured by noise or identifying the missing fundamental frequency in a signal implied by its harmonic frequencies. It is often used in signal processing for analyzing functions or series of values, such as time domain signals. Autocorrelation problem will occur when error term at the period t is correlated with the error term at period before t. Autocorrelation is most likely to happen in the time series data due to the importance of the sequence of the time period. In this study the researcher applies Breusch-Godfrey Serial Correlation LM test to test the presence of autocorrelation Brooks, (2008).

Multicollinearity- This assumption implicitly tells that there is no correlation among the explanatory variables. Hence, they are orthogonal to one another. In other words, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. Brooks, (2008). Multicollinearity is a situation where the explanatory variables are nearly linear dependent Jurczyk, (2011). Imperfect multicollinearity is defined as "a linear functional relationship between two or more independent variables that is so strong that it can significantly affect the estimation of the coefficients of the variables." Multicollinearity will cause the variances and standard errors of the estimates to increase and the t-scores to decrease. However, it will not bias the estimate and the overall fit of the equation Studenmund, (2011). There were different arguments towards the multicollinearity problem. Cooper & Schendlar, (2003) Suggested that a correlation above 0.8 between explanatory

variables should be corrected for. Lastly, Hair JF, (2006) argued that also correlation coefficient below 0.9 may not cause serious multicollinearity problem. The other indicator of multicollinearity is variance inflation factor VIFs of the linear regression indicate the degree that the variances in the regression estimates are increased due to multicollinearity. VIF vales higher than 10 and tolerance less than 0.1 indicates that multicollinearity is a problem Jackson, (2011).

3.6 Description of Variables

3.6.1 Dependent Variables

The dependent variable used financial performance measured by: Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE could be thought of as the return on net assets. ROE is considered a measure of how effectively management is using a company's assets to create profits. ROE is expressed as a percentage and can be calculated for any company if net income and equity are both positive numbers. In general, financial analysts consider return on equity ratios in the 15-20% range as representing attractive levels of investment quality Richard, (2015). It is measured by the ratio of net profit to total equity.

3.6.2 Independent Variables

The independent variable which is CAMEL framework has five components these are: capital adequacy, Asset quality, management quality, Earning ability and Liquidity position. Based on Mekonnen et al., (2015) for this study the researcher used the variables measurement stated in the below table 3.1:

Table 3.1- Measurement of independent Variables

Independent Variables	Measurement
Capital adequacy	Total Capital (TC) to Total Risk Weighted Assets (TRWA)
Asset Quality	Loan loss provision to Total loan
Management Efficiency	Non-Interest Expense to Net Income

Earning Quality	Return on Asset (ROA)
Liquidity position	Cash Deposits with other banks and NBE to Total Assets

3.6.2.1 Capital Adequacy

The dimension of capital adequacy is an important factor to help the bank in understanding the shock attractive capability during risk. In this study, capital adequacy is measured by using the equity to total risk weighted asset ratio (Vong & Chan, 2009). That means, capital adequacy enables a bank to meet any financial unexpected condition due to credit risk, market risk, interest rate risk. Capital adequacy protects the interest of depositors of a bank Jackson, (2011).

3.6.2.2 Asset Quality

The dimension of asset quality is an important factor to help the bank in understanding the risk on the exposure of the debtors. In this paper, this parameter is measured by the provision for loan loss reserve to total loan ratio (Merchant, 2012). This ratio assures to cover the bad and doubtful loans of the bank. This parameter will benefit the bank in understanding the amount of funds that have been reserved by the banks in the event of bad investments. All banks maintain loan loss allowances to cover estimated potential losses in their loan portfolios. As the aftereffects of the subprime crisis have subsided, the allowance for loan losses for the industry have exhibited a declining trend. As the asset quality improves, banks are setting aside less allowance for potential defaults. Improved asset quality means fewer charge-offs and higher profits for banks. The banking sector's asset quality indicators are generally moving in the right direction Mikiay,

3.6.2.3 Management Efficiency

Management efficiency reflects the management soundness of a bank. The management acts as a safeguard to operate the bank in a smooth and decent manner and is called excellence management or skillful management, whenever it controls its cost and increases productivity, ultimately achieving higher profits. Here, this parameter is measured by non-interest expenses to net income ratio. Since a bank's operating expenses are in the numerator and its revenue is in the denominator, a lower efficiency ratio means that a bank is operating better. It is believed that a ratio of 50% is the maximum optimal efficiency ratio. (Paramasivan, 2008)

3.6.2.4 Earnings

Earning is an important parameter to measure the financial performance of an organization. Earning quality mainly measures the profitability and productivity of the bank, explains the growth and sustainability of future earnings capacity. In the same way, bank depends on its earning to perform the activities like funding dividends, maintaining adequate capital levels, providing for opportunities for investment for bank to grow, strategies for engaging in new activities and maintaining the competitive outlook. Here earning is determined by return on asset.

3.6.2.5 Liquidity

Liquidity ratio in a bank measures the ability to pay its current obligations (Hazzi & Kilani, 2013). For having sound banking operations, it needs to have liquidity solvency. If any bank faces liquidity crisis, bank can't meet up its short-term obligations. Liquidity crisis seems to be a curse to the image of banks. So, it is a prime concern to banks. Cash and investments are the most liquid assets of a bank. An adequate liquidity position means a situation, where institution can obtain sufficient funds, either by rising liabilities or by converting its assets quickly at a reasonable cost Mekonnen et.al., (2015). Here liquidity performance is measured by cash deposits by other banks and NBE to total asset ratio.

CHAPTER FOUR DATA ANALYSIS

Introduction

In this chapter the audited financial statements which was collected from NBE is used to make the analysis. These financial statements consisted of financial performance return on equity (ROE) and CAMEL components i.e. Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity. Capital adequacy was proxied by the ratio of Total Capital (TC) to total risk weighted assets (TRWA) based on the NBE directives 2016, asset quality by total doubtful loan to total loans, management efficiency by Non-Interest Expense to net income, earnings quality is return on assets and liquidity by cash deposits with other banks and NBE to total assets. The research data which is collected from NBE that the analysis was done is attached in the appendix.

4 Results and Discussion

4.1 Descriptive Analysis

CAMEL analysis approach is beneficial as it is an internationally standardized rating and provides flexibility between on-site and off-site examination; hence, it is the main model in assessing banks' performance. (Dang, 2011)

Based on the study average 10 years calculation of CAMEL components of the sample selected commercial banks in Ethiopia average ratios within the study periods from 2008 to 2017 is indicated in the below table. The detail of each year ROE and Earning (ROA) for each bank and the financial statement collected from the NBE is attached in the appendix.

Table 4.1 Average Ratio of Variables

Sample Banks	ROE	CAMEL Components				
		CAR	AQ	ME	Earnings	Liquidity
CBE	31.16	14%	3%	39%	3.03	25%
AIB	26.08	15%	3%	42%	3.27	29%

DB	30.82	15%	2%	41%	3.15	33%
BOA	21.97	16%	4%	53%	2.41	30%
WB	20.86	26%	3%	45%	3.52	33%
UB	21.57	18%	2%	50%	2.64	33%
Average	25.41	17%	3%	45%	3.00	31%

Source researcher calculation from the annual financial statement /2008-2017/

4.1.1 Capital adequacy

Capital Adequacy ratio refers to the ability of the capital base of a financial institution to absorb unanticipated shocks. Capital adequacy of any financial institution is instrumental in the formation of risk perceptions about it amongst its stakeholders. Capital adequacies are a measure of the amount of a bank's core capital expressed as a percentage of its assets weighted credit exposures. Based on the risk weighted asset many countries measure their capital adequacy based on risk level of asset. As different types of assets have different risk profiles, capital adequacy ratio will be adjusting for assets that are less risky by allowing banks to "discount" lower-risk assets Mekonnen, et al., (2015). The study used a measurement of capital adequacy by comparing the total capital (means the sum of paid-up capital, retained earnings, donated equity, legal reserve and permanent free reserves acceptable to the National Bank of Ethiopia held by a capital goods finance company) to the level of total risk weighted assets (means assets of a capital goods finance company determined by weighting each asset item by the weight assigned to it and aggregating the result which shall be calculated in accordance with the National Bank of Ethiopia guideline on April 2016. According to the NBE guideline banking sector a capital goods finance company shall maintain at all times a minimum capital adequacy ratio of 10% (NBE, 2016) computed as a ratio of total capital to total risk-weighted assets and 8% which is set by the Basel, that means the capital of the bank is sustain well above the minimum required by the regulatory body. The study sampled commercial banks in Ethiopia have no such problem regarding capital adequacy which all the banking sector have average greater than the standard set by the Basel accord and the standard set by the national bank of Ethiopia as shown in table 4.1. Based on the study result the average of the bank's capital to risk weighted asset is 17%, which is said to be the capital of the bank is sustain well above the minimum required by the

regulatory body, and as a best practice banks with a rate of 15% of CAR is said to be strong bank.

4.1.2 Asset quality

Asset quality is an important parameter for any banking institution, as the quality of its assets has a major role on the earning ability of that institution. Asset quality measured in relation to the level and severity of nonperforming assets, recoveries, the level of provisioning and is indicate how the banks managers control its loan. The study evaluating the quality of asset for Ethiopian banking industry by calculating loan provision to total loan and advances. The higher the ratio indicates the bank is in higher risk compared to those with lower ratio. According to the measurement of the Basel accord banks which have average greater than 1% is said to be the asset quality of the industry is in the good situation. According to the result of the study shown in table 4.1 average ratio of 3% indicated that it's above the threshold set by the standard that indicates banks have a strong asset quality and minimal portfolio risks. Measuring of management quality is subjective by its nature. there are several indicators, however, can jointly serve as an indicator of management soundness. Expenses ratio, earning per employee, cost per loan, average loan size and cost per unit of money lent can be used as a proxy of the management quality Baral, (2005).

4.1.3 Management Efficiency

Management efficiency is basically the capability of the board of directors and management, to identify, measure, and control the risks of an institution activities and to ensure the safe, sound, and efficient operation in compliance with applicable laws and regulations (Uniform Financial Institutions Rating System, 1997). However, several indicators can jointly serve as an indicator of management soundness. The parameter is measured by non-interest expenses to net income ratio. Since a bank's operating expenses are in the numerator and its revenue is in the denominator, a lower efficiency ratio means that a bank is operating better. A general rule of thumb is that a ratio of 50% is the maximum optimal efficiency ratio. (Uniform Financial Institutions Rating System, 1997). The study measures the efficiency of the manager of the sample commercial banks for ten years period by using efficiency ratio and as shown in table 4.1 the sample commercial banks have average efficiency ratio of 45% as compared to the standard of 50% it indicates that they are less efficient in utilizing and control of their asset.

4.1.4 Earning

The higher the performance of the bank is the higher profitability of the banks. The earning ability of the banking sector in Ethiopia has been measured by comparing how well the average assets generate income which is the ROA. The higher the ratio is the better soundness of the banking sector. The Basel accord states if banks return on asset greater than or equal to 1 is said to be banks performance is in good position and according to NBE rating commercial banks having maximum of 2. Olweny and shipo, state that if banking industry scored above 1.5 is said to be strong. Thus, the sample commercial banks in the study calculated in table 4.1 has an average of 3 which is greater than the standard, indicates that how well the average assets generate income which is the return on asset. And also, return on equity (ROE) shows how the managers are effective in converting the reinvested money into profit, according to Basel accord if banks return on equity is 15 or greater than is said to be the banks are in good status accordingly, the result of the study in table 4.1 shows the average ROE is 25.41 which indicates that the sample banks during the study period met the minimum standard.

4.1.5 Liquidity

Liquidity ratio in a bank measures the ability to pay its current obligations (Hazzi & Kilani, 2013). For having sound banking operations, it needs to have liquidity solvency. If any bank faces liquidity crisis, bank can't meet up its short-term obligations. Liquidity crisis seems to be a curse to the image of banks. So, it is a prime concern to banks. Cash and investments are the most liquid assets of a bank. An adequate liquidity position means a situation, where institution can obtain sufficient funds, either by rising liabilities or by converting its assets quickly at a reasonable cost. The study used to measure liquidity performance is by cash deposits in other banks and NBE to total asset ratio and the UB, WB, BOA and DB have better liquidity position than AIB and CBE. The national bank of Ethiopia which is the regulator of the banking industry put a minimum result of 15% which having good status greater than 20% is strong. Therefore, the result of the study in table 4.1 the liquidity ratio indicates that commercial banks in Ethiopia has good liquidity position.

4.2 Econometric Analysis

4.2.1 Correlation Analysis

Correlation measures the degree of linear association between variables. Values of the correlation coefficient are always ranged between +1 and -1. A correlation coefficient of +1 indicates that the existence of a perfect positive association between the two variables, while a correlation coefficient of -1 indicates perfect negative association. A correlation coefficient of zero, on the other hand, indicates the absence of relationship between two variables Brooks, (2008) The dataset for dependent and independent variables were used for six commercial banks in Ethiopia of ten years period and it's result in table 4.2 indicated that the management efficiency ratio is highly negatively correlated variable at a significant level with return on equity (ROE).

As per the table 4.2 below, the correlation coefficient between return on equity and capital adequacy ratio is -0.29 which means the capital adequacy of the commercial banks has low negative relation with Return on equity. When the Capital adequacy ratio increases the return on equity ratio decreases and vice versa. The Correlation coefficient between return on equity and asset quality of commercial banks is -0.012 it indicates that the increase in Asset quality will result in the decreased the ratio of return on equity and vice versa. There is high negative Correlation between return on equity and management efficiency of commercial banks. Since the correlation coefficient is -0.84 it indicates that the increase in management efficiency will result in the decrease the ratio of return on equity and vice versa. The correlation coefficient between return on equity and earnings ratio is 0.657 this shows there is a positive relation between the two variables whereas the correlation coefficient between return on equity and liquidity ratio is 0.233 which indicate there is a low positive relation with P-value of 0.0726 insignificant to measure the financial performance of banks in Ethiopia. The other three variables capital adequacy CAR, Management efficiency and earnings with P-value of 0,0229, 0.0000 and 0.0000 respectively indicates that it is statistically significant. The result of this study regarding CAR is consistent with (Misiker, 2015) and (Tegene, 2018) and inconsistent with the study of Goddard et al., (2004) and (Hassan and Bashir, 2003) which hypothesized that there is a positive association between CAR and ROE of commercial banks.

Table 4.2 Correlation Matrix

Covariance Analysis: Ordinary
 Date: 06/08/19 Time: 16:52
 Sample: 1 60
 Included observations: 60

Correlation						
Probability	ROE	CAR	AQ	ME	EARNINGS	LIQUIDITY
ROE	1.000000					

CAR	-0.293307	1.000000				
	0.0229	-----				
AQ	-0.012151	0.244049	1.000000			
	0.9266	0.0602	-----			
ME	-0.841006	-0.081199	-0.108497	1.000000		
	0.0000	0.5374	0.4093	-----		
EARNINGS	0.657482	0.325220	-0.080596	-0.778872	1.000000	
	0.0000	0.0112	0.5404	0.0000	-----	
LIQUIDITY	0.233435	0.511990	0.641008	-0.452228	0.272743	1.000000
	0.0726	0.0000	0.0000	0.0003	0.0350	-----

Source- Sample commercial banks annual report output using EViews 8

4.2.2 Classical Linear Regression Model Assumptions

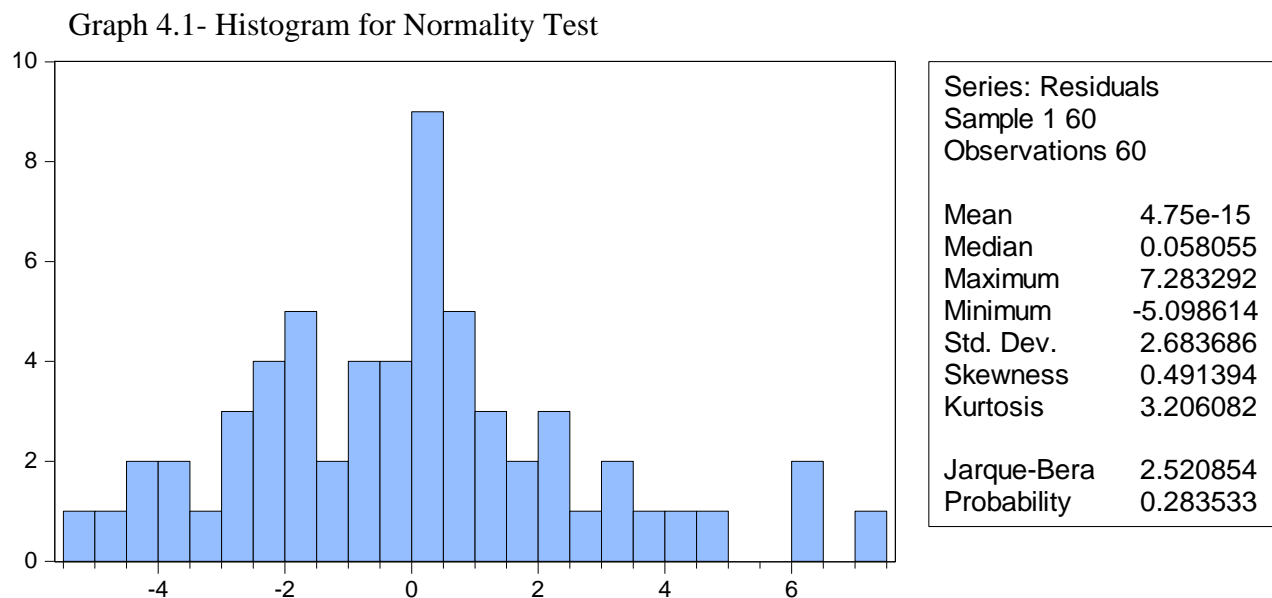
The main objective of the model is to predict the strength as well as direction of association among the dependent and independent variables. Accordingly, in order to maintain the validity and robustness of the regression result of the research in CLRM, it is better to satisfy basic assumption of CLRM. When these assumptions are satisfied, all available information are used in the model. On the contrary, if these assumptions are violated, there will be data that left out of the model Brooks, (2008). Therefore, before using the model for testing the significance of the slopes and analyzing the regressed result, normality, multicollinearity, autocorrelation and heteroscedasticity tests are checked for identifying misspecification of data if any so as to fulfill validity and the quality of the research.

4.2.2.1 Test for Average Value of the error term is Zero

According to Brooks, (2008), if a constant term is included in the regression equation, this assumption will never be violated. Thus, since the regression model used in this study included a constant term, this assumption is not violated.

4.2.2.2 Normality Test

One of the assumptions of regression analysis is the assumption of normal distribution of the data under the study. This assumption lies on the notion that states normal distribution of the error terms is required to conduct single or joint hypothesis tests about the parameters. A normal distribution is not skewed, need to have a kurtosis of 3, and the Bera- Jarque statistic should not be significant at 5% significance level. Brooks, (2008) According to the below Graph 4.1 the data under the study the normality test indicate that the coefficient of kurtosis is close to 3 and Skewness near to zero, implying that the data is consistent with a normal distribution assumption. Therefore, the assumption of Normal distribution will not be rejected because the test for normality is achieved with a kurtosis of 3.2 it's near to 3, and the Skewness is 0.4 nearly to zero which indicates the data are clustered around the mean.



Source- Sample commercial banks annual report output using EViews 8

4.2.2.3 Multicollinearity Test

Multicollinearity means the existence of a “perfect” or exact, linear relationship among some or all explanatory variables Gujarati, (2004). As noted in Gujarati, (2004) if multicollinearity is perfect, the regression coefficients of the explanatory variables are indeterminate, and their standard errors are infinite. If multicollinearity is less than perfect, the regression coefficients, although determinate, possess large standard errors (in relation to the coefficients themselves), which means the coefficients cannot be estimated with great precision or accuracy.

This assumption implicitly tells that there is no correlation among the explanatory variables. Hence, they are orthogonal to one another. In other words, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. Brooks, (2008). Multicollinearity is a situation where the explanatory variables are nearly linear dependent Jurczyk, (2011). The study used as indicator of multicollinearity is variance inflation factor VIFs of the linear regression indicate the degree that the variances in the regression estimates are increased due to multicollinearity. VIF vales higher than 10 and tolerance factor less than 0.1 indicates that multicollinearity is a problem. Therefore, the result of the study in table 4.3 shown below indicates that there is no problem of multicollinearity among variables because the value of VIF is less than 10 and the value of tolerance factor is greater than 0.1.

Table 4.3 Variance Inflation Factor – VIF

Variable	VIF	Tolerance
CAR	2.179452	0.45883094
AQ	1.937198	0.51620949
ME	4.596435	0.21755991
EARNINGS	4.084245	0.24484329
LIQUIDITY	3.414961	0.29282911
C	NA	NA

Source- Sample commercial banks annual report output using EViews 8

4.2.2.4 Test for Absence of Autocorrelation Assumption

This assumption basically lies on the notion that states covariance between the error terms over time (or cross-sectionally) is zero. In other words, it is assumed that the errors are uncorrelated one another. Thus, the null hypothesis is meant for checking whether the error terms are auto

correlated or not. The measurement done by Durbin-Watson statistic used from by the Breusch-Godfrey test (LM Test). For the purpose of this paper, DW statistic is considered. Autocorrelation has a critical value near two indicates nonexistence of autocorrelation Brooks, (2008). Therefore, the value of DW of the study shows in Appendix-1 the Breusch-Godfrey test (LM Test) is 1.96 which indicates the assumption of no autocorrelation won't be rejected.

4.2.2.5 Test for Heteroscedasticity

This test involves testing the null hypothesis which states the variance of the errors is constant (assumption of homoscedasticity). In other words, it tries to check whether the errors have constant variance or not. If the test fails to assure the existence of constant variance in the errors, heteroscedasticity is evident. According to Brooks, (2008) there are a number of heteroscedasticity tests, however white test is selected for the purpose of the study.

Table 4.4 Test for Heteroscedasticity

Heteroskedasticity Test: White

F-statistic	6.936419	Prob. F(20,39)	0.0000
Obs*R-squared	46.83384	Prob. Chi-Square(20)	0.0006
Scaled explained SS	41.84432	Prob. Chi-Square(20)	0.0029

Source- Sample commercial banks annual report output using EViews 8

According to table 4.4 indicated above results of the P-value of F-statistic is 0.0000 which is significant at 5% significance level. As per the standard of white test, if the P-value is significant at 5%, the null hypothesis of no heteroscedasticity will not be rejected.

4.2.3 Model selection Random Effect/Fixed Effect Model

The study focused on panel data model technique that comprises both cross sectional elements and time-series elements reflected by the six different selected commercial banks in Ethiopia and on the period of ten years from 2008 to 2017. According to Brooks, (2008) there are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models and random effects models. The choice between both approaches is done by running a Hausman test. To conduct Hausman test the number of cross sections should be greater than the number of coefficients to be estimated. In this study the numbers of cross section are greater than

the number of coefficients to be estimated, so it is possible to conduct Hausman test. Thus, to determine whether the random effects or fixed effect is necessary this study runs the Hausman specification test as recommended by Brooks, (2008). The hypothesis for the model selection test was formulated as follow;

H0: Random effects model is appropriate.

H1: Fixed effects model is appropriate.

Decision Rule: Reject H0 if p-value less than significance level 5%. Otherwise, do not reject Ho.

To examine whether individual effects are fixed or random, a Hausman specification test was conducted. According to the Hausman test output in table 4.5, shows a P-value of 0.000 which means based on the standard, if the tests P-value is <0.05 then the effect is Fixed Effect model Brooks, (2008). Therefore, the fixed effect model specification is preferred for this research.

Table 4.5: Results of Hausman Test (To test the model is fixed or random effect)

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	36.637269	5	0.0000

Source- Sample commercial banks annual report using EViews 8 output

The fixed effects coefficients of the regressors' indicate how much profitability changes when there is a change in the capital, asset quality, management efficiency, earning quality, and liquidity management. Moreover, the overall regression as indicated in table 4.6 is statistically significant, at P-value for F-statistics is 0.0000. Thus, it supports the fact that capital adequacy, asset quality, management efficiency, earning quality, and liquidity management are important factors in determining the profitability of commercial banks in Ethiopia. The coefficient of multiple determinants (adjusted R-squared), which indicates, the quality of fitness of the model, in table 4.6 shows that about 87.6% of the changes in profitability of commercial banks in Ethiopia are caused by variables incorporated in the CAMEL components.

4.2.4 Multiple Regression Analysis

In the following analysis a multivariate model was applied to find out the effect of CAMEL components on the financial performance of commercial banks in Ethiopia. A linear regression model of commercial banks the CAMEL components versus financial performance represented by return on equity were applied to examine the relationships between the variables. According to Brooks, (2008) the relationships model was represented by the following linear equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where: Y = Financial performance represented by Return on Equity /ROE/

β_0 = Constant term

X_1 = Capital Adequacy /CAR/

X_2 = Asset Quality /AQ/

X_3 = Management Efficiency /ME/

X_4 = Earnings

X_5 = Liquidity

ϵ = Error term

When evaluating the overall fit of a regression equation, it needs to take a look at a measure of R-squared or the coefficient of determination. R-squared is the ratio of the explained sum of squares to the total sum of squares. The higher R-squared is, the closer the estimated regression equation fits the data. R-squared measures the percentage of the variation of Y around mean of Y that is explained by the regression equation. R-squared lies between 0 and 1, the closer the value to 1, the better the overall fits Studenmund, (2011).

The regression model assumes the linearity of the parameter since the model applies linear ordinary least square (OLS). The main objective of the model is to predict the strength as well as direction of association among the dependent and independent variables. Accordingly, in order to maintain the validity and robustness of the regression result of the research in CLRM, it is better to satisfy basic assumption of CLRM. When these assumptions are satisfied, all available information are used in the model. On the contrary, if these assumptions are violated, there will be data that left out of the model Brooks, (2008). Therefore, before using the model for testing the significance of the slopes and analyzing the regressed result, normality, multicollinearity,

autocorrelation and heteroscedasticity tests are checked for identifying misspecification of data if any so as to fulfill research quality. The model is stated as follows

$$\text{ROE} = 35.99 - 84.049 \cdot \text{CAR} - 13.63 \cdot \text{AQ} - 30.36 \cdot \text{ME} + 4.56 \cdot \text{EARNINGS} + 14.70 \cdot \text{LIQUIDITY}$$

Table 4.6: The Result of Fixed Effect Regression Model

Cross-section fixed effects test equation:

Dependent Variable: ROE

Method: Panel Least Squares

Date: 06/14/19 Time: 16:35

Sample: 2008 2017

Periods included: 10

Cross-sections included: 6

Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	-84.04850	9.890469	-8.497929	0.0000
AQ	-13.62674	27.11143	-0.502620	0.6173
ME	-30.36512	6.466634	-4.695661	0.0000
EARNINGS	4.561988	1.003379	4.546624	0.0000
LIQUIDITY	14.70614	5.539980	2.654548	0.0104
C	35.99984	5.563131	6.471147	0.0000

R-squared 0.886543

Adjusted R-squared 0.876038

F-statistic 84.39043

Prob(F-statistic) 0.000000

Source- Sample commercial banks annual report output using EViews 8

From the result of the above Table 4.6 R-squared statistics and the adjusted-R squared statistics of the model is 88.6 % and 87.6 % respectively. The result indicates that the predictors of the model which are capital adequacy, asset quality, management efficiency, earnings and liquidity ratios have a correlation of 87.6% with the dependent variable of return on equity (ROE), the remaining 12.4% of the change is explained by other factors which are not included in the model. The value of Adjusted R- squared also shows that 87.6% of the variability of return on equity can be explained by CAMEL components. Therefore, these variables collectively, are good explanatory variables of risk management on bank performance of commercial banks in Ethiopia, P value of F-statistic 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the model.

Furthermore, the study examined the impact of bank specific internal and macroeconomic external factors on the level of financial performance which is measured by ROE based on regression result of fixed Effect Model in Table 4.6 in terms of examination of coefficients of

explanatory variables and significance level. The result of the study data in table 4.6 indicates that the dependent variable which is financial performance measured by ROE will be 35.99 holding constant to capital adequacy, asset quality, management efficiency, earnings and liquidity. A one unit increase in capital adequacy will lead to a decrease in financial performance (ROE) by 84.04 and a one unit increase in asset quality will lead to a decrease in financial performance (ROE) by 13.63 and a one unit increase in management efficiency will lead to a decrease in financial performance (ROE) by 30.36. Similarly, a one unit increase in earnings will lead to increase in financial performance (ROE) by 4.56 and a unit increase in liquidity will lead to increase the financial performance (ROE) by 14.70. The result of the study also shows that Capital adequacy, management efficiency, earnings and Liquidity are statistically significant as their p-value is less than 5%, but the p-value of Asset Quality is 0.6173 which is greater than 5% and it's statistically insignificant, in total as shown in table 4.6 in total prob.(F-statistic) indicates the model is statistically significant. That means the independent variables which are the CAMEL components are significant at 1% level as the p-values are less than the standard 5% level. Therefore, the null hypothesis (H₀) Commercial banks which use the CAMEL components to measure performance have better management systems which impacted their performance will not be rejected.

4.2.5 Interpretation on Regression Result

This section discusses in detail the analysis of the results for each explanatory variable and their importance in determining financial performance which is measured by ROE of commercial banks in Ethiopian. Furthermore, the study examined the relationship between explanatory variables (CAMEL components) and financial performance of commercial banks which is measured by ROE based on the regression result of fixed Effect Model. According to the result of regression analysis stated in table 4.6 the study found that R-squared statistics and the adjusted-R squared statistics of the model is 88.6 % and 87.6 % respectively. The result indicates that the predictors of the model which are capital adequacy, asset quality, management efficiency, earnings and liquidity ratios have a correlation of 87.6% with the dependent variable of return on equity (ROE), the remaining 12.4% of the change is explained by other factors which are not included in the study. The value of Adjusted R- squared also shows that 87.6% of the variability of return on equity can be explained by CAMEL components. Therefore, these

variables collectively, are good explanatory variables of on bank performance of commercial banks in Ethiopia, P value of F-statistic 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the study using fixed effect model.

The result of the study data in table 4.6 indicates that the dependent variable which is financial performance measured by ROE will be 35.99 holding constant to capital adequacy, asset quality, management efficiency, earnings and liquidity. The relationship between the ROE and the CAMEL components separately analyzed as detailed below:

Capital Adequacy (CAR)

The coefficient of capital adequacy (CAR) was negative at -84.04 and statistically significant at 1% significant level. These indicates that there is an inverse relationship between the CAR and Return on equity (ROE). A one unit increase in capital adequacy will lead to a decrease in financial performance ROE by 84.04. This result is consistent with Mekonnen et al., (2015), Ermias, (2016) and Jackson, (2011) which their study conclude CAMEL framework can well measure commercial banks, and inconsistent with Solomon, (2018)

Asset Quality (AQ)

The coefficient of asset quality was negative at -13.62 and statistically insignificant even at 10% significant level. These indicates that there is an inverse relationship between the asset quality and Return on equity (ROE). A one unit increase in asset quality will lead to a decrease in financial performance (ROE) by 13.62. This result is consistent with Jackson, (2011) and Mulualem, (2015) which their study conclude CAMEL framework can well measure commercial banks.

Management Efficiency

The coefficient of management efficiency was negative at -30.36 and statistically significant at 1% significant level. These indicates that there is an inverse relationship between the asset quality and Return on equity (ROE). A one unit increase in efficiency will lead to a decrease in financial performance (ROE) by 30.36. This result is consistent with Jackson, (2011) and

Mulualem, (2015) which their study conclude CAMEL framework can well measure commercial banks.

Earnings

The coefficient of earning has positive effect at 4.56 and statistically significant at 1% significant level. These indicates that there is a positive relationship between the earnings and Return on equity (ROE). A one unit increase in capital adequacy will lead to increase in financial performance (ROE) by 4.56. This result is consistent with Jackson, (2011) and Mulualem, (2015) which their study conclude CAMEL framework can well measure commercial banks.

Liquidity

The coefficient of liquidity was negative at 14.70 and statistically at 5% significant level. These indicates that there is a positive relationship between the asset quality and Return on equity (ROE). A one unit increase in asset quality will lead to increase in financial performance (ROE) by 14.70. This result is consistent with Jackson, (2011) Mulualem, (2015) which their study conclude CAMEL framework can well measure commercial banks.

According to the study result on table 4.6 capital adequacy, Asset quality and management efficiency affect negatively, but earning Ability and liquidity position affect profitability measured by return on equity positively at statistically significant level. That means the independent variables which are the CAMEL components are significant at 1% level as the P-value of F-statistic jointly for the model is 0.0000. The result indicates also that the predictors of the model which are capital adequacy, asset quality, management efficiency, earnings and liquidity ratios have a correlation of 87.6% with the dependent variable of return on equity (ROE). In the study collinearity problem also have been checked by the variance inflation factor and tolerance factor all the study variable has no multicollinearity problem because the two measurements fulfill the requirement. In general, based on the result of the study CLARM assumption tests the model fulfill the research quality within the sample population of the study.

Therefore, the null hypothesis (H₀) Commercial banks in Ethiopia which use the CAMEL components to measure performance have better management systems which impacted their performance will not be rejected.

CHAPTER FIVE

CONCLUSION, RECOMMENDATION AND LIMITATIONS

5 Introduction

This chapter presents conclusions based on discussions of the key findings presented in chapter four and recommendations. This chapter is, thus, structured into conclusions, recommendations and limitations of the study.

5.1 Conclusion

The study tried to investigate the CAMEL components and financial performance of commercial banks in Ethiopia over the period 2008-2017 for selected six commercial banks in Ethiopia the financial statements collected from NBE. The study used secondary panel data and econometric model using E-views software obtained from published Financial statement from National Bank of Ethiopia (NBE). The regression analysis was done using least square method. Hence, the regression analysis output result that incorporated variables in the CAMEL model is seen to be statistically significant and supported the fact that CAMEL component bank specific variables: capital adequacy, asset quality, management efficiency, earning, and liquidity management are important factors in determining the performance (ROE) of commercial banks in Ethiopia.

The coefficient of multiple determinants also indicates that 87.6% of the changes in performance (ROE) of commercial banks in Ethiopia are explained by variables incorporated in the CAMEL components. According to Mekonnen et al., (2015) Return on equity (ROE) reveals how much profit a company earned in comparison to the total amount of shareholder equity found on the balance sheet. It indicates how effective the management team is in converting the reinvested money into profits. The higher the ROE is, the more money a company able to generate for the same birr spent by the banks. The capital adequacy ratio revealed that banks with high capital to risk weighted asset will strongly enhances the profitability of the banks, based on CAMEL rating the banks included in the study all have more than the minimum requirement rate of 10%, which indicates strong capital level relative to the performance. According to the measurement of the Basel accord banks which have average greater than one is said to be the asset quality of the industry is in the good situation and the banks in the study indicated that all of them meet

minimum requirement. The study also measures the quality of the manager by using efficiency ratio, the average ratio for the BOA and UB on this study is 53% and 50% respectively which was efficient, and WB 45% was less efficient as compared to the 50% maximum and the other banks which were used in the study shows less efficiency ratio. The earning ability of all the sample banks indicates how well manager make control to the asset of the bank and equity in order to get a better earning. The sample banks under the study scored greater than the standard set by the Basel accord which indicate that all the sample banks were in strong situation. Lastly the liquidity position of the banks under the study determines how well the banks cash deposit with foreign banks and NBE to total assets have the ability to cover immediate obligations required by the depositors. The higher the ratio is the more liquidity position of the bank. National bank of Ethiopia state that banks to be said strong should keep liquid assets not less than 15% of its current liabilities. The industry average for the study was higher than the required rate by the NBE. This is a good indication for the bank to attract more customers to deposit in the banks, but sometimes the higher the ratio also indicates that the banks have higher tied money in their account.

According to the study the independent variables which are the CAMEL components are significant at the P-value of F-statistic jointly for the model is 0.0000. The result indicates also that the predictors of the model which are capital adequacy, asset quality, management efficiency, earnings and liquidity ratios have a correlation of 87.6% with the dependent variable of return on equity (ROE). In the study collinearity problem also have been checked by the variance inflation factor and tolerance factor all the study variable has no multicollinearity problem because the two measurements fulfill the requirement. In general, based on the result of the study CLARM assumption tests the model fulfill the research quality within the sample population of the study.

Therefore, the null hypothesis (H₀) Commercial banks in Ethiopia which use the CAMEL components to measure performance have better management systems which impacted their performance will not be rejected.

5.2 Recommendation

Banking investments among individual investors are increasing and a basic CAMEL rating knowledge can help them gain better understanding about their investment on their own rather

than seeking the investment agencies. It will assist the investors in understanding the current situation of the banks and their strengths and weaknesses. This helps them make precise and timely decisions towards their investment. Therefore, making the capital adequacy ratios stricter could possibly affect the profitability of banks and which also affects the shareholders wealth, so the regulatory body of commercial banks in Ethiopia should help them to invest the shareholders money than just hold it as a capital. The study findings also recommend that CAMEL components measure Ethiopian commercial banks performance management. Therefore, in the further research one might want to consider this paper as a reference to expand the scope and improve results of the study.

5.3 Limitations of the Study

A more comprehensive study can be undertaken by including the African banks in the population which will enhance the findings of the study. In addition to this there was challenge by NBE accessing a more comprehensive and organized data whereby they say some the items are highly confidential instead being highly accessible.

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Appendices

Appendix - 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	19.59505	Prob. F(2,52)	0.0000
Obs*R-squared	25.78576	Prob. Chi-Square(2)	0.0000

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 05/31/19 Time: 17:28

Sample: 1 60

Included observations: 60

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	-9.356957	7.773303	-1.203730	0.2341
AQ	0.434588	20.86414	0.020829	0.9835
ME	5.495883	5.061345	1.085854	0.2826
EARNINGS	1.102216	0.792663	1.390523	0.1703
LIQUIDITY	1.984659	4.274930	0.464255	0.6444
C	-4.764334	4.359627	-1.092831	0.2795
RESID(-1)	0.743244	0.138170	5.379219	0.0000
RESID(-2)	-0.115821	0.136324	-0.849605	0.3994

R-squared	0.429763	Mean dependent var	4.75E-15
Adjusted R-squared	0.353000	S.D. dependent var	2.683686
S.E. of regression	2.158658	Akaike info criterion	4.500417
Sum squared resid	242.3099	Schwarz criterion	4.779663
Log likelihood	-127.0125	Hannan-Quinn criter.	4.609645
F-statistic	5.598585	Durbin-Watson stat	1.962789
Prob(F-statistic)	0.000076		

Appendix - 2

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	36.637269	5	0.0000

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CAR	-89.616867	-84.048504	81.079699	0.5363
AQ	-7.939343	-13.626740	297.600674	0.7416
ME	-23.209278	-30.365120	5.672735	0.0027
EARNINGS	5.908804	4.561988	0.115065	0.0001
LIQUIDITY	17.252425	14.706145	15.341885	0.5156

Cross-section random effects test equation:

Dependent Variable: ROE

Method: Panel Least Squares

Date: 06/07/19 Time: 01:44

Sample: 2008 2017

Periods included: 10

Cross-sections included: 6

Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.76788	5.028793	5.720633	0.0000
CAR	-89.61687	11.94833	-7.500367	0.0000
AQ	-7.939343	27.58778	-0.287785	0.7747
ME	-23.20928	5.660509	-4.100211	0.0002
EARNINGS	5.908804	0.865968	6.823355	0.0000
LIQUIDITY	17.25243	5.890233	2.928989	0.0051

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.935082	Mean dependent var	25.41189
Adjusted R-squared	0.921834	S.D. dependent var	7.967398
S.E. of regression	2.227544	Akaike info criterion	4.603819
Sum squared resid	243.1357	Schwarz criterion	4.987782
Log likelihood	-127.1146	Hannan-Quinn criter.	4.754008
F-statistic	70.58008	Durbin-Watson stat	1.076185
Prob(F-statistic)	0.000000		

Appendix - 3

Hypothesis Test

Wald Test:

Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	84.39043	(5, 54)	0.0000
Chi-square	421.9521	5	0.0000

Null Hypothesis: $C(1)=C(2)=C(3)=C(4)=C(5)=0$

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1)	-84.04850	9.890469
C(2)	-13.62674	27.11143
C(3)	-30.36512	6.466634
C(4)	4.561988	1.003379
C(5)	14.70614	5.539980

Restrictions are linear in coefficients.

Source- Sample commercial banks annual report output using EViews 8

Appendix - 4

Sample calculation for CBE 2008 of Capital Adequacy (CAR) Based on National Bank Standard

Assets	Amount	Risk Weight (%)	Total Risk Weighted Asset
Cash on hand	2,912	0%	-
Cash at banks/MFIs including time deposits	5,184	20%	1,036.84
Cash at NBE	15,444	0%	-
Prepayments	-	0%	-
Claims on Federal Government	-	0%	-
Claims on Regional Governments	-	20%	-
Net Investment in Hire-purchase portfolio after loss reserves	-	100%	-
Financial lease assets (net of accumulated depreciation)	-	100%	-
Other Receivables	36,565	100%	36,565
Investments (all investments except investment in government Securities)	14,445	100%	14,445
Fixed Assets (net of accumulated depreciation)	786	100%	786
Intangible assets	-	100%	-
Other Assets	-	100%	-
Total Risk Weighted Assets	75,337		52,833
Total Capital			8,362
Ratio of Total Capital to Risk-Weighted Assets (C=B/A) (%)			16%
Computation of Total Capital	Amount (ETB)		
Paid-up capital	6,668		
Retained earnings/accumulated losses: Prior periods	393		
Donated equity - unrestricted			
Legal reserves	1,252		
Permanent free reserves (such as general reserve)	49		
Total Capital (1+2+3+4+5)	8,362		

Appendix - 5

List of Commercial banks in Ethiopia used in the study with year of establishment

- 1- Awash International Bank - 1994
- 2- Bank of Abyssinia – 1996
- 3- Commercial Bank of Ethiopia - 1963
- 4- Dashen Bank – 2003
- 5- United Bank - 1998
- 6- Wegagaen Bank - 1997