ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF THE PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA: CAMEL APPROACH

BY
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A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION IN ACCOUNTING AND FINANCE

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DECLARATION

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

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St. Mary's University, Addis Ababa   JUNE, 2018

ENDORSEMENT

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

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ACRONYMS AND ABBREVIATIONS

AB	Abay Bank
ADIB	Addis International Bank
AIB	Awash International Bank
AQ	Asset Quality
BIB	Berhan International Bank
BJ	Bera-Jarque
BOA	Bank of Abyssinia
BUIB	Bunna International Bank
CAR	Capital Adequacy Ratio
CAMEL	Capital adequacy, Asset Quality, Management efficiency, Earning ability, Liquidity
CBO	Cooperative Bank of Oromiya
DB	Dashen Bank
DW	Durbin-Watson
EAR	Earning Ability
LIB	Lion International Bank
LIQ	Liquidity
MGT	Management Efficiency
NBE	National Bank of Ethiopia
NIB	Nib International Bank
OIB	Oromiya International Bank
ROA	Return on Asset
ROE	Return on Equity
UB	United Bank
WB	Wogagen Bank
ZB	Zemen Bank

ABSTRACT

The objective of the study was to determine the impact of CAMEL (Capital adequacy, asset quality, Management efficiency, Earning ability and Liquidity) on the profitability of private commercial banks of Ethiopia. The financial performance of fourteen private commercial banks was examined by using panel data of five years from the year 2013 to 2017. The study used quantitative research approach and secondary financial data was analyzed by using multiple linear regression model. Fixed effect model was applied to investigate the impact of the independent variables; Capital adequacy, asset quality, Management efficiency, Earning ability and Liquidity on bank profitability measure; Return on Asset(ROA), which is considered as the dependent variable. The study used E-views8 software for the analysis. Data analysis has been done using descriptive statistics, correlation analysis and multiple linear regression model. The regression result shows that asset quality, management efficiency, earnings and liquidity as statistically significant determinants of profitability while capital adequacy was found to be statistically insignificant determinant of Ethiopian private commercial banks performance.

Key Words: Banks, Profitability, ROA, CAMEL

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Chapter one

Introduction

1.1. Background of the study

Commercial banks play an important role in the financial system and the economy. The existence of strong and effective banking system is very important for the economic development of a country. Any modern financial system contributes to economic development and the improvement in living standards by providing various services to the rest of the economy. These include clearing and settlement systems to facilitate trade, channeling financial resources between savers and borrowers, and various products to deal with risk and uncertainty. Banks play a very useful and crucial role in the economic life of every nation. They have control over a large part of the supply of money in circulation, and they can influence the nature and character of production in any country (Echekoba etal, 2014).

Banks play a key role in improving economic efficiency by channeling funds from resource surplus unit to those with better productive investment opportunities. Banks also play key role in trade and payment system by significantly reducing transaction costs and increasing convenience.

Bank is a very old institution that is contributing toward the development of any economy and it's treated as an important service industry in the modern world. Nowadays the function of banks is not limited within the same geographical limits of a country, it is an important source of financing for most global businesses. Banks need to find the best way to manage use and consumption of resources and assess related activities. Generally the financial performance of banks and other financial institutions is measured by using combinations of financial ratio analysis, benchmarking, measuring performance against budget or mix of these methodologies (Echekoba etal, 2014).

A sound banking system is instrumental to the sustainable development of the real economy. As we are witnessing growth both in terms of the number of such institutions and in terms of the

amount of money managed by them, there follows challenges which will require further intensive efforts on the part of these institutions to enhance the quality of its products and services and diversity, and to keep pace with the rapid developments taking place in the world in this field. In less monetized countries, like Ethiopia, where financial sector is dominated by banking industry, effective and efficient functioning of the latter has significant role in accelerating economic growth (Zerayehu, Kagnew and Teshome, 2013).

A profitable and sound banking sector is at a better point to endure adverse upsets and adds performance in to the financial system. Performance evaluation through the determinants of profitability is one of the important approaches for enterprises to give incentive and restraint to their operations and it is an important channel for enterprise stakeholders to get the performance information. The performance through profitability evaluation of banks is usually related to how well the bank can use its assets, shareholders' equities and liabilities, revenue and expenses. The performance evaluation of banks is important for all parties including depositors, investors, bank managers and regulators. One of the ways to determine the performance of banks is through the determination of its profits (Echekoba etal, 2014).

There is no gainsaying that the strength of a bank is undoubtedly linked to its profitability, hence, the primary desire of the bank's management is to continually make profit as this would assure their continued existence and foster buoyancy for the nation. It is of noteworthy that bank managers should understand the key factors that affect bank profitability and these factors could be internal and external determinants. The internal determinants originate from bank accounts (balance sheets and/or profit and loss accounts) and therefore could be termed micro or bank-specific determinants of profitability while the external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions (Athanasoglou, Brissimis & Delis, 2005).

The evaluation of banks performance usually employs the financial ratio method which provides a simple description about banks financial performance in comparison with previous periods and helps to improve its performance of management. The CAMEL method is derived from a system developed by the Federal Financial Institutions Examination (FFIEC) in the US on March1979. CAMEL is an acronym that indicates the five most important attributes for the bank financial analysis. The CAMEL framework aims to categorize the key determinants on banks' financial

performance, which are: capital adequacy, asset quality, management efficiency, earnings, liquidity and sensitivity (Liu, 2011).

Financial ratios based on CAMEL framework are related to Capital, Assets, Management, Earnings and Liquidity considerations. These ratios include return on asset (ROA), capital adequacy ratio (CAR), Asset Quality Ratio(AQR), Management Efficiency Ratio (MER), Earning Ratio (EARN) and liquidity ratio (LIQR).

1.2. An overview of Ethiopian banking industry

Ethiopian banking history, in its modern sense began towards the end of the reign of Emperor Menilik II. This period witnessed the establishment of the country's first bank called Bank of Abyssinia. It was an affiliate of the national bank of Egypt and was founded in 1905. Ten years later, in 1995, the bank began issuing bank notes. the issue of this paper money was another notable event in the country's history (Pankhurst, 2018).

According to the agreement signed between the Ethiopian government and the national bank of Egypt which was owned by the British, the bank was allowed to engage in commercial banking (selling shares, accepting deposits and effecting payments in cheques) and to issue currency notes. The agreement prevented the establishment of any other bank in Ethiopia, thus giving monopoly right to the bank of Abyssinia (Fasil and Merhatbeb, 2012).

The Ethiopian Government under Emperor Haile Sellassie, closed the Bank of Abyssinia, paid compensation to its shareholders and established the bank of Ethiopia which was fully owned by Ethiopian with a capital of pound sterling 750,000. The bank started operating in 1932. The majority shareholders of the bank of Ethiopia were the Emperor and the political elites of the time. The bank was authorized to combine the functions of central banking (issuing currency notes and coins) and commercial banking (Fasil and Merhatbeb, 2012).

During the five years of Italian occupation (1936-1941) banking activity of the country was relatively expanded. As a result, most of the banks that were in operation during these period were Italian Banks. After independence from Italy's brief occupation, where the role of Britain was paramount, Barclays Bank was established and it remained in business in Ethiopia between 1941 and 1943. Following this, in 1943 the Ethiopian government established the state Bank of

Ethiopia. The Bank of Ethiopia was operating as both Commercial and a Central Bank until 1963 when it was remodeled into today's National Bank of Ethiopia (NBE) (The Central Bank, Re-established in 1976) and the Commercial Bank of Ethiopia (CBE) (Degefe, 1995).

All privately owned financial institutions including three commercial banks, thirteen insurance companies, and two non-bank financial intermediaries were nationalized on 1 January, 1975. The nationalized banks were reorganized and one Commercial Bank (The CBE), a national Bank(recreated in 1976), two specialized banks i.e., the Agricultural and Industrial Bank, renamed as the Development Bank of Ethiopia and a Housing and Saving Bank, renamed recently as the Construction and Business Bank (CBB), and one insurance company (Ethiopian Insurance Company) were formed (Degefe, 1995).

Following the regime change in 1991 and the liberalization policy in 1992, these financial institutions were organized to work to a market-oriented policy framework. Moreover, new privately owned financial institutions were also allowed to work alongside the publicly owned ones.

Currently, 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 for about 95% of the total financial sector assets, implying that the financial sector is undeveloped, and activities that banks could perform are legally limited, which in turn contribute to lesser contestability. Currently the Ethiopian banking industry is composed of 2 government banks (after construction and business bank is swallowed by the giant commercial bank of Ethiopia) and 16 private banks.

Overall, Ethiopia's economy experienced strong, broad-based growth averaging 10.3% a year from 2005/06 to 2015/16, compared to a regional average of 5.4% (World Bank, 2018). The development of a vibrant and active private banking system that complements existing public sector work is considered important to Ethiopia's economic progress by a range of experts, including the World Bank, the African Development Bank (ADB), and the International Monetary Fund (IMF).

1.3. Statement of the problem

Banks are typically the major sources of finance for the majority of firms and are usually the main depository of economic savings (Athanasoglou et al, 2008). As banks play a huge role in an emerging economy like Ethiopia, it is of a paramount importance to make sure that the banking sector if running efficiently and profitably.

The function and significance of banking sector cannot be under-estimated in the development of an economy. The strength of economy of any country basically hinges on the strength and efficiency of financial system, which, in turn, depends upon a sound banking system.

Financial development in many developing economies is still faced by a number of obstacles such as macroeconomic instability, the unavailability or if available; fragility of stock markets, the limitation of capital markets, and the inefficiency of development and specialized banks (Sangmi and Nazir, 2010).

Despite some of these limitations, banking systems in underdeveloped countries remain integral components of the general economic systems and they can be considered as key element in any development effort (Zeinab, 2006).

A healthy and vibrant economy requires a financial system that helps in effective and efficient allocation and utilization of scarce resources. The banking sector is the largest component of the financial system, and its roles impinge on all aspects of the economy. Countries with a well developed banking system grow faster in contrary to countries having weak banking system (Falkena et al, 2004)

From the above discussion it is cleared that the role of banking system is vital and crucial for the capital formation in the country and it necessitates that banks must be more closely watched for their economic efficiency and performance.

Banks dedicated to improving their performance care about profitability-oriented performance measurement and management. Profitability-oriented performance management is necessary, both to know what a bank can do to affect profits and to benchmark the effect of any such moves. The fact that the sector is the back bone of an economy and the importance of it's

performance both in national and international economics stresses the need to keep it's performance under surveillance at all times.

CAMEL model is a useful tool for performance evaluation of and examining the soundness of banks . After the financial crisis's the world has seen many times over the need for supervision of banks has increased. The CAMEL model is used worldwide to evaluate the performance of banks (Olweny 2011; Liu 2011; Athanasoglou et al 2005). A few researches have also been done here in Ethiopia using the CAMEL model. for example; Minyahil (2013) used the model to measure the financial performance of banks and the impact of the global financial crisis on the banks performance. while, others like Tamirat (2015) and Samson (2009) have worked on the effect of debt financing on profitability of commercial banks and cost efficiency and profitability analysis respectively, although, they did not use the CAMEL model. On the other hand Mulualem (2015) used the model emphasizing on comparing and ranking banks performance. But as far as the researcher's knowledge, the CAMEL model has not been used extensively to measure its impact on the profitability of commercial banks. This research tried to fill that gap.

1.4.   Objectives of the study

1.4.1.   General Objective

The general objective of this study is to determine and evaluate the effects of CAMEL on the profitability of private commercial banks of Ethiopia.

1.4.2.   Specific objectives of the study

- To determine the impact of capital adequacy on the profitability of private commercial banks of Ethiopia
- To determine the impact of asset quality on the profitability of private commercial banks of Ethiopia
- To determine the impact of management efficiency on the profitability of private commercial banks of Ethiopia
- To determine the impact of earnings on the profitability of private commercial banks of Ethiopia

- To determine the impact of liquidity on the profitability of private commercial banks of Ethiopia

1.5. Research Hypothesis

Based on the objective, the study seeks to test the following hypothesis:

H1: There is a significant relationship between capital adequacy ratio and profitability of the banks.

H2: There is a significant relationship between asset quality ratio and profitability of the banks.

H3: There is a significant relationship between management efficiency ratio and profitability of the banks.

H4: There is a significant relationship between earnings ratio and profitability of the banks.

H5: There is a significant relationship between liquidity ratio and profitability of the banks.

1.6. Significance of the study

Achieving the profitability objective of a bank is a major concern for top-level management of banks and economic analysts. This concern relates to the significant impact of the profitability of commercial banks on the potential growth of the economy. A study to investigate the determinants of commercial banks' profitability would be of great significance to bank managers to plan in advance and deal with the rising uncertainty experienced in the banking business environment, thereby improving corporate performance. Empirical literature on the determinants of commercial bank profitability is extensive, however, little is known about the Ethiopian commercial banking sector. This study provides policy implications which would assist bank regulatory authorities in Ethiopia, determine future policies and regulations to be formulated and implemented toward improving and sustaining banking sector profitability and stability.

The study assessed the determinants of bank performance specifically its profitability based on the CAMEL model. It gives important insight to supervisors as well as managers of commercial banks in Ethiopia, highlighting strong areas and weak points of the banks using the CAMEL

model. It also shades light about the importance of CAMEL model to risk managers and others who are interested to examine the performance of the banks.

The Study also provides useful information for stake holders to make better investment decisions and to help banks to mark and re-evaluate their performance based on the performance measurements used in the study.

1.7. Scope and limitations of the study

The scope of the study is limited to 14 private commercial banks established in Ethiopia namely, Dashen Bank, Awash International Bank, Bank of Abyssinia, Wegagen Bank, United Bank, Nib International Bank, Lion International Bank, Cooperative Bank Of Oromia, Zemen Bank, Oromia International Bank, Bunna International Bank, Birhan International Bank, Abay Bank, Addis International bank. The study accounts for the determinants of banks profitability using the CAMEL model for the period between 2013-2017 (Five years).

Due to the confidentiality of the banking industry, the researcher found it fairly difficult to access certain types of materials like Non-performing loans data and in some cases data's of past financial years consistently which in turn limited the research. In Addition, the unavailability of data related to the measurement of the sixth factor of the CAMEL model, i.e. sensitivity to market risk, has limited the researcher to not include it in the study.

1.8. Organization of the study

This study is organized into five chapters. Chapter one presents introductions of the study. The literature review part of the study is presented in Chapter two. The literature review includes both theoretical review and review of previous studies. Chapter three presents the research design and methodology and then comes result and discussions presented in Chapter Four. Finally, Chapter Five presents summary, conclusion and recommendation of the study.

<center>**Chapter Two**</center>

<center>**Literature Review**</center>

2. Theoretical literature

2.1. The need to analyze profitability

The trend of banking is changing rapidly. Competition is getting stiffer and, therefore, banks need to enhance their competitiveness and efficiency by improving performance. These significance changes are also occurring in the banking sector of developing economics like Ethiopia. These changes have increased the importance of performance analysis of modern banks.

Raza et al (2011) indicates that Bank performance has become a favorite subject for many stakeholders. A stable and efficient financial system represents efficient allocation of resources and it becomes the foundation of rising of financial performance of an organization which leads to achieve their ultimate objectives.

Banking industry being an important pillar of the financial sector of an economy, its performance measurement cannot be neglected. Performance evaluation of the banking sector is an effective measure and indicator to check the soundness of economic activities of an economy.

According to Khan (2006), the economic importance of banks to the developing countries may be viewed as promoting capital formation, encouraging innovation, monetization, influence economic activity, and facilitator of monetary policy. Banking sector is an important and unquestionable determinant of the economic development as it directs the flow of the funds from surplus economic units of the economy towards deficit economic units.

Athanasoglou, Brissimis and Delis (2005) pointed out the importance of bank's performance in developing countries, for the financial markets in the countries which are not developed well yet, since the banks are the primary economic saving, depository and main source for financing the majority of companies.

Financial performance in broader sense refers to the degree to which financial objectives being or has been accomplished and is an important aspect of financial risk management. It is the process of measuring the result of a firm's policies and operations in monetary terms .It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industries or sectors in aggregation.

In order to cope with the complexity and mix of risk exposure to banking system properly, responsibly, beneficially and sustainably, it is of a great importance to evaluate the overall performance of banks by implementing a regulatory banking supervision framework. One of such measures of supervisory information is the CAMEL rating system.

Profit maximization is a core objective of every organization, including banks. Profitability can be defined as an outcome which arises from the effectiveness of management and optimal utilization of resources at its disposal; thus leading to reaping of higher return on capital employed. The management of any firm should be able to identify its strength and weakness, likewise exploit opportunities and tackle threats if it is determined to make profits (Adeusi, Kalapo, & Aluko,2014).

According to European Central Bank (2010), the definition for describing the bank performance is the capacity of the banks to generate sustainable profitability. Profitability is very important for a bank, in term of the capability to hold ongoing activities and to obtain good return for its investors. Golin (2001) pointed that earnings and profitability were the ways to evaluate the overall performance of a bank. The bank will be able to bar exceptional circumstances, to maintain its solvency and to grow by making adequate earnings and profitability.

Later on, Jha and Hui (2012) also pointed that the analysis of financial ratios could present better investment choices to investors, for it evaluates in each different angle of the performance of a company.

There are many different measures of a bank's performance in literature. Among these performance measures, return on assets (ROA) and return on equity (ROE) were the two of the most popular ratios used for accessing the bank or other industries' performance (Liu,2011).

Bank performance is usually measured by Return on Assets (ROA), Return on Equity (ROE) or the Net Interest Margin (NIM) and is a function of internal and external determinants. Internal determinants are also sometimes called microeconomic determinants or inherent performance, while external determinants are variables that reflect economic and legal environment in which the bank operates.

2.2. The Concept of CAMEL

CAMEL is the acronym for the factors that form the basis for bank rating system. These factors are capital adequacy, asset quality, management efficiency, earnings and liquidity. Under this rating system, banks are rated in relation to the quality of these factors. The strength of these factors would determine the overall strength of the bank. The quality and strength of these factors enables the regulatory authorities to focus on the banks that are not doing well and to pay special attention to them. The regulatory authorities not only study the financial statements of the banks, but also carry out on-site inspection and thereafter, rate the bank. The rating system is based on a scale of one to five (1 -5) with one (1) being the highest score and five (5) the lowest. Banks scoring one (1) would be considered as among the top bracket in regard to their financial soundness, and those scoring five (5) would be seen to be at the bottom of the ladder.

The Uniform Financial Institution Rating system, commonly referred to the acronym CAMEL rating, was adopted by the Federal Financial Institution Examination Council on November 13 1979, and then adopted by the National Credit Union Administration in October 1987.

It has proven to be an effective internal supervisory tool for evaluating the soundness of a financial firm, on the basis of identifying those institutions requiring special attention or concern. (Uniform Financial Institutions Rating System, 1997).

2.2.1. Capital adequacy

Capital Adequacy refers to the sufficiency of the amount of equity to absorb any shocks that the bank may experience (Nwankwo,1991).The capital structure of banks is highly regulated. This is because capital plays a crucial role in reducing the number of bank failures and looses to the stakeholders.

Capital adequacy is the capital expected to maintain balance with the risks exposure of the financial institution such as credit risk, market risk and operational risk, in order to absorb the potential losses and protect the financial institution's debt holder. Meeting statutory minimum capital requirement is the key factor in deciding the capital adequacy, and maintaining an adequate level of capital is a critical element (Uniform Financial Institutions Rating System, 1997).

The capital adequacy ratio (CAR) is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. Credit exposure is the total amount of credit made available to a borrower by a lender. The magnitude of credit exposure indicates the extent to which the lender is exposed to the risk of loss in the event of the borrower's default. Credit exposure can be minimized through purchasing credit_default_swaps or other types of financial instruments.

Also known as capital-to-risk weighted assets ratio (CRAR), it is used to protect depositors and promote the stability and efficiency of financial systems around the world. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

The capital adequacy is estimated upon the following financial ratios

Ratios	Formula
CAR	(Tiers 1 capital- goodwill) + Tiers 2 capital Risk-weighted assets
Equity Capital to Total Assets	Total Capital Total Assets

Table 1: Capital adequacy ratios

Tier 1 capital (core capital) is shareholder equity capital. Tier 2 capitals (supplementary capital) are the bank's loan loss reserves plus subordinated debt which consists of bonds sold to raise

funds. Risk-weighted assets are the weighted total of each class of assets and off-balance sheet asset exposures, with weights related to the risk associated with each type of assets. (Croushore, 2006)

2.2.2. Asset Quality

Asset quality reveals a bank's asset risk situation and a bank's financial strength. For this reason, this factor performs a major role for assessing the bank's current situation and its future viability (Zhong, 2007).

The quality of assets held by a bank depends on the exposure to specific risks, trends in Non-performing loans and the health of profitability of bank borrowers. Poor asset quality and low level of liquidity are the two major causes of bank failure. Many financial institutions that collapse are due to high rate of Non-performing loans(NPL) and extensive insider lending (Echekoba, et al, 2014).

According to Grier (2007), poor asset quality is the major cause of most bank failures. A most important asset category is the loan portfolio; the greatest risk facing the bank is the risk of loan losses derived from the delinquent loans. The credit analyst should carry out the asset quality assessment by evaluating the quality of loan portfolio using trend analysis and peer comparison.

Frost (2004) stresses that the asset quality indicators highlight the use of non-performing loans ratios (NPLs) which are the proxy of asset quality, and the allowance or provision to loan losses reserve. As defined in usual classification system, loans include five categories: standard, special mention, substandard, doubtful and loss. NPLs are regarded as the three lowest categories which are past due or for which interest has not been paid for international norm of 90 days. In some countries regulators allow a longer period, typically 180 days. The bank is regulated to back up the bad debts by providing adequate provisions to the loan loss reserve account. The allowance for loan loss to total loans and the provision for loan loss to total loans should also be taken into account to estimate thoroughly the quality of loan portfolio.

The asset quality is essentially based upon the following ratios

Ratios	Formula
NPLs to total loans	NPLs Total Loans
NPLs to total equity	NPLs Total Equity
Allowance for loan loss ratio	Allowance for Loan Loss Total Loans
Provision for loan loss ratio	Provision for Loan Loss Total Loans

Table 2:Asset quality ratios

2.2.3. Management Efficiency

Management quality or efficiency plays a big role in determining the future of a bank. The management has an overview of bank's operations, manages the quality of loans and has to ensure that the bank is profitable.

Management quality is basically the capability of the board of directors and management, to identify, measure, and control the risks of an institution's activities and to ensure the safe, sound, and efficient operation in compliance with applicable laws and regulations (Uniform Financial Institutions Rating System, 1997).

The performance of management capacity is usually qualitative and can be understood through the subjective evaluation of management systems, organization culture, and control mechanisms and so on. However, the capacity of the management of a bank can also be gauged with the help of certain ratios of off-site evaluation of a bank in the capacity of the management to deploy its resources aggressively to maximize the income, utilize the facilities in the bank productively and reduce costs, etc. According to Sangmi and Nazir (2010), management efficiency can be evaluated with reference to expenditure to income ratio, credit to deposit ratio, Asset utilization ratio, diversification ratio, earnings per employee ratio and expenditure per employee ratio.

The management efficiency ratio is estimated based upon the following key financial ratios

Ratios	Formulas
Cost to income	Cost Income
Operating cost to net operating income	Operating Cost Operating Income

Table 3: Management efficiency ratio

2.2.4. Earning Ability

In accordance with Grier's (2007) opinion, a consistent profit not only builds the public confidence in the bank but absorbs loan losses and provides sufficient provisions. It is also necessary for a balanced financial structure and helps provide shareholder reward. Thus consistently healthy earnings are essential to the sustainability of banking institutions. Profitability ratios measure the ability of a company to generate profits from revenue and assets.

The earnings of a bank refer to the profit made by it. Profit is the difference between income and expenditure. The major source of income for banks are interest earned on loans and other incomes derived from general banking activities while expenditure of banks may be among other things, salaries, wages, rents, administrative overheads, taxes, etc. It is the surplus that remains after taking care of all expanses that is known as net profit. A healthy bank should be able to generate decent profits regulatory and keep itself as well as its investors, in good health because the ability of a bank to support her present and future operations depends on the quality of its earnings and profitability.

The earning ability is estimated based upon the following key financial ratios

Ratios	Formula
Net interest income Margin (NIM)	Net interest Income Average Earning Assets
Cost to income ratio	Operating Expenses (excluding Provision loss) Net interest income + Non-interest income

Return on asset (ROA)	Net Interest Income
	Asset growth rate
Return on equity (ROE)	Net Interest Income
	Shareholder's equity growth rate

Table 4: Earnings ratio

2.2.5. Liquidity

There should be adequacy of liquidity sources compared to present and future needs, and availability of assets readily convertible to cash without undue loss. The fund management practices should ensure an institution is able to maintain a level of liquidity sufficient to meet its financial obligations in a timely manner; and capable of quickly liquidating assets with minimal loss. (Uniform Financial Institutions Rating System, 1997).

Another important decision that the managers of commercial banks take refers to the liquidity management. Liquidity is simply the ease with which assets of banks can be cashed in times of need or in its fair value. It is that quality of an asset that enables a bank to respond to any financial situation requiring urgent infusion of money. Liquidity is required to meet regular financial obligations of the bank especially without dipping into its reserves. When banks hold high liquidity, they do so at the opportunity cost of some investment which could generate high returns. The trade-offs that generally exist between return and liquidity risk are demonstrated by observing that a shift from short-term securities to long-term securities or loans raises a bank's return but also increases its liquidity risks and the inverse in is true. Thus a high liquidity ratio might indicates a less risky and less profitable bank.

Liquidity is estimated based upon the following key financial ratios.

Ratios	Formula
Customer deposits to total assets	Total customer deposits
	Total Assets
Total loan to customer deposits (LTD)	Total Loans
	Total customer deposits

Table 5: Liquidity ratios

2.3. Return on asset (ROA)

Empirical analysis finds that both bank specific as well as macroeconomic factors are important determinants in the profitability of banks,(Westerfield, 2008). Brealey and Myers (2003) argue that there are various important measures in determining profitability of an organization. These include; Return on Assets (ROA) and Return on Equity (ROE).

The traditional accounting based measures are easy proxies of banks' profitability, obtainable from public disclosed information. As concluded by extensive Prior academic researches there are different accounting based measures for banks' profitability. For instance, Return on Equity (ROE) used by (Goddard et al, 2004), Return on Assets (ROA) used by (Flamini et al., 2009, return on equity and Return on Assets (ROA) used by (Athanasoglou et al, 2006), Ommeren (2011) and Demirguc-Kunt and Huizinga (1999) as proxy for banks' profitability.

According to their investigation those accounting based measurements of bank profitability are nearer to accurate and proxies to measures profitability, even if, they have their own drawbacks. Study examined by Flamini et al. (2009) proved that return on assets (ROA) as a measure of bank profitability works very well. It is defined as the banks' after tax profit over total assets. In principle, ROA reflects the ability of a bank's management to generate profits from the bank's assets. It shows the profit earned per dollar of assets and most importantly, reflects the management's ability to utilize the bank's financial and real investment resources to generate profits, although it may be biased due to off-balance-sheet activities.

Return on assets indicates net profit against assets inputs, the majority of assets in most of banks consist of loans. Return on assets measures how effectively a bank's assets are being administrated to make profits (Golin, 2001). Return on assets shows how much profit a company earned for every dollar of its assets, it was a primary indicator for managerial efficiency (Elyor, 2009). Bakar and Tahir (2009) used ROA as a dependent variable for bank performance with success. Return on equity indicates net profit against equity input (Golin, 2001).The ROE indicates the rate of return for the shareholders of a bank, it reviews how effectively a bank used its investors' money (Elyor, 2009). Siddiqui and Shoaib (2011) measured the performance of 22 banks in Pakistan for the period 2002 to 2009 by using ROE with success.

For any bank, ROA depends on the bank's policy decisions as well as uncontrollable factors relating to the economy and government regulations. Many regulators believe return on assets is the best measure of bank efficiency and it emerges as the key ratio for the evaluation of bank profitability (Flamini et al. 2009).

According to (Athanasoglou et al, 2006), many scholars remind that ROA is the key ratio for the evaluation of bank profitability given that ROA is not distorted by high equity multipliers, while ROE disregards the risks associated with high financial leverage. In this respect, it is rare to find a paper utilizing ROE as a single measure of profitability. Most of the time papers utilize ROE for checking the consistency with ROA.

The rate of return on assets (ROA) is the most comprehensive accounting measure of a bank's overall performance. Because of this, the majority of studies employed ROA as profitability measure, for instance, (Flamini et al, 2009; Olweny and Shipho, 2011; Echrkoba et al, 2014).

In line with earlier studies that examined the determinants of banks' profits this research relies on one commonly used measure of profitability by using the traditional accounting method. That is the return on assets (ROA), calculated as net profit after tax divided by total assets. This is probably the most important measure used in comparing the operating performance of banks, and uses the average value in order to control for differences that occur in assets during the fiscal year. The analysis towards determinants of banks' profitability uses only ROA and not ROE since (Gerhard, 2002); suggest that the results by using either ROE or ROA are comparable because the yearly variation in the numerator (net income) is greater than the yearly variation in the denominator (assets or equity).

ROA is also another major ratio that indicates the profitability of a bank. It is a ratio of Income to its total asset. It measures the ability of the bank management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution. It state that a higher ROA shows that the company is more efficient in using its resources (Flamini et al 2009).

2.4.   Empirical literature

Nowadays, bank credit analysts universally adopt the CAMEL model for credit analysis. The CAMEL approach was used to estimate bank creditworthiness by most credit and rating agencies in the financial industry. There are even a number of equity analysts who used the CAMEL approach to help themselves to make recommendations concerning the valuation of bank stock (Golin, 2001). Elyor (2009) proved that the CAMEL model is a good model to improve bank performance. Both ROA and ROE were found to be influenced by the determinants from the CAMEL framework in his research.

Olweny (2011) also used the CAMEL approach to locate the determinants on Kenya banks' profitability, and it showed that all the bank-specific factors that came from the CAMEL approach had statistically important effect on the profitability of a bank.

Safarli and Gumush (2012) in their paper used CAMELS performance rating system and panel data analysis for examining the relationship between performance of Azerbaijan banking system and macroeconomic factors in the period of 2003-2008. Their empirical results indicated that performance of banks decreased from 2005 to 2008, and inflation and GDP are negatively related with performance of banking system.

Obeidat et al (2013) analyzed the most important internal and external variables that contributed toward the profitability of the Islamic banks in Jordan over the period 1997- 2006 employing robust for various regression models. Findings obtained from the study shown that the most important internal determinants of profitability are total deposit, cost of deposits, total expenditures, loans and restricted investment deposits, the main external determinants are the money supply and market share.

Baltacı (2014) investigated the relationship between the profitability of Turkish banks in the sector and macro-economic variables using the sectoral data of 31 banks in period of 2001-2011. As a result of his analysis, a positive relationship between bank profitability, inflation and indicators of crisis has been found.

Helhel and Varshalomidze (2014) used CAMELS rating system to evaluate the performance and efficiency of the Georgian banking sector. In this study, six domestic private commercial banks for the period 2007 to 2013 were analyzed using eighteen financial ratios. It was concluded that after the war with Russia and economic crises during 2008-2009 period, none of the banks involved in this research could obtain an improvement in terms of each component and provide an improvement in their performance.

Bakar and Tahir(2009) in their paper used multiple linear regression techniques and simulated neural network techniques for predicting bank performance. Return on asset (ROA) was used s dependent variable of bank performance and seven variables including liquidity, credit risk, cost to income ratio were used as independent variables. They concluded that neural network method out performs the linear regression method, however, they noted that multiple linear regression can be used as a simple tool to study the linear relationship between dependent and independent variables.

Ahmad, (2011) in his study of the financial performance of seven Jordanian commercial banks used ROA as a measure of banks' performance and the bank size, assets management and operational efficiency as three independent variables affecting ROA. He concluded that there is a strong negative correlation between ROA and bank size and with operational efficiency, while, find positive correlation between ROA and asset management ratio. Khizer et.al. (2011), in his study about profitability indicators of banks in Pakistan for the period of 2006-2009 find that profitability is directly and positively affected by operating efficiency, assets management ratios, and size when using ROA as profitability indicator.

A study conducted by Mulualem (2015) used the CAMEL model to analyze the performance of commercial banks in Ethiopia using both ROA and ROE as the dependent variables. The empirical result shows that except capital adequacy being insignificant for ROA and Asset quality being insignificant for ROE the rest of the variables of the CAMEL model showed statistical significance for both performance measures.

Echekoba et al (2014) used the CAMEL model to determine the impact it has on the profitability of Nigerian banks. the finding based on the analysis indicated that liquidity has a significant

impact on banks profitability while capital adequacy, asset quality, management efficiency and earnings did not.

According to the study conducted by Rani and Zeraw (2015) on determinants of financial performance of commercial banks using panel data from Ethiopia, all bank specific variables: Capital adequacy, asset quality, management efficiency, earnings and liquidity are found to be statistically significant determinants of banks financial performance which was measured by ROA.

2.5.   Conceptual framework

From the theoretical and empirical literature the following conceptual framework of the study is developed by the researcher.

Independent Variables

Determinants Of The Profitability of private Commercial Banks

Dependent Variable

- **Capital Adequacy**

Capital To Asset Ratio

- **Asset Quality**

Provision For Loan to Total Loan Ratio

- **Management Efficiency**

Non Interest Expense to Net Interest Income & Non Interest Income Ratio

- **Earnings**

Net Interest Income to Total Asset Ratio

- **Liquidity**

Total Loan to Total deposit Ratio

Performance Measured by ROA

(Return On Asset)

Chapter three

Research Methodology

The objective of this study is to determine the effect of CAMEL on the profitability of banks in Ethiopia. The study focuses on private commercial banks in Ethiopia. The data is obtained from the Central Bank of Ethiopia (CBE) annual reports and statement of accounts as well as the banks themselves. Time series data is used and the period that is covered in the study is 2013 to 2017.

A basic linear regression model is used to analyze the data. The profitability ratio return on asset (ROA) is assumed as the dependent variable while capital adequacy ratio (CAR), Asset Quality Ratio (AQR), Management efficiency ratio (MER), Earnings ratio (EARN) and liquidity ratio (LIQR) are assumed as the independent variables. These ratios represent CAMEL as the independent variables and ROA as the dependent variable.

3.1. Research method adopted

Cooper et al. (2003) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. Thus, explanatory research design was used in this research because the study identifies the cause and effect of CAMEL on private commercial banks performance which is appropriate for the objective of the study.

The research also used correlation and econometric regression model to test the relationship between dependent and independent variables. The profitability ratio ROA is assumed as the dependent variable while Capital adequacy, Asset quality, Management efficiency, Earning and Liquidity ratios are assumed as independent variables.

3.2. Target Population

The target population for this study was all private commercial banks of Ethiopia which are sixteen in total as of date. But The population size was reduced to 14 because of unavailability of five years data in one bank and inaccessibility and inconsistency of financial data in another.

3.3. Sample Design

Currently, there are sixteen private commercial banks operating in Ethiopia. From the total populations of private commercial banks, for the study purpose, the researcher used sample of fourteen private commercial banks. The two private commercial banks were not included in the sample because of unavailability of data. The sample was taken from, Dashen Bank, Awash International bank, Bank Of Abyssinia, Wegagen bank, Nib International bank, United bank, Lion International bank, Cooperative bank of Oromia, Zemen bank, Oromia International bank, Bunna International bank, Birhan International bank, Abay bank and Addis international bank.

According to Suheyli (2015) as cited in Singh (2006) when the subjects used in the sample is homogeneous, using purposive sampling technique is appropriate. Hence, the researcher employed purposive sampling method to draw the sample from the population and meet the study objective. The matrix for the frame is 14*5 that includes 70 observations.

3.4. Model specification

According to Brooks (2008), it is very easy to generalize the simple model to one with k repressors' (independent variables). $Y_i = \beta_1 + \beta_2 x_{1i} + \beta_3 x_{2i} + \cdots + \beta_k x_{ki} + \varepsilon_i$, $i = (1, 2, \ldots, i)$. So, Where Y_i is the ith observation of the dependent variable, $X_{1i},\ldots,X_{ki}$ are the ith observation of the independent variables, $\beta_0,\ldots,\beta_k$ are the regression coefficients, ε_i is the ith observation of the stochastic error term.

Accordingly, to test the effect of the CAMEL variables on the performance of private commercial banks, the researcher estimated a linear regression model in the following form.

Econometric Model

$ROA_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 AQR_{it} + \beta_3 MER_{it} + \beta_4 EARN_{it} + \beta_5 LIQR_{it} + \varepsilon_{it}$ Where,

ROA_{it} = Performance of bank i at time t as expressed by Return on Asset

β_0 = intercept, β_1 - β_6 = Coefficients of Parameters

CAR_{it} = Capital Adequacy Ratio of Bank i at time t

AQRit = Asset Quality Ratio of Bank i at time t

MERit = Management Efficiency Ratio of Bank i at time t

EARNit = Earnings ratio of Bank i at time t

LIQRit = Liquidity Ratio of Bank i at time t

εit = Error term where i is cross sectional and t time identifier

3.5. Variables Description

This study used explanatory variables such as; capital adequacy ratio, asset quality ratio, management efficiency ratio, earnings ratio and liquidity ratio while the dependent variable was return on asset.

3.5.1. Dependent Variable

The dependent variable of the study is the return on asset, which is taken as a proxy for the measurement of profitability of private commercial banks in Ethiopia.

Return on Assets (ROA)

The Return on Assets ratio is an important profitability ratio because it measures the efficiency with which the bank is managing its investment in assets and using them to generate profit. It measures the amount of profit earned relative to the bank's level of investment in total assets. The return on assets ratio is related to the asset management category of financial ratios.

Return on Asset (ROA) = Net profit after tax

                          Total asset

3.5.2. Independent Variables

The major determinants (independent variables) of financial performance of commercial banks are capital adequacy, asset quality, management efficiency, earnings and liquidity status which

shall be proxied by selected ratios. The CAMEL ratios are the popular indicators often used in representing bank specific factors in relation to financial performance'

3.5.2.1. *Capital Adequacy Ratio (CAR)*

Capital adequacy ratio has emerged as one of the major indicators of the financial health of a banking entity. It is measured as a ratio of bank's own capital (new equity, retained earnings, etc.) to its total assets (loans, investments in stock markets, guarantees, etc). Well adherence to capital adequacy regime does play a vital role in minimizing the cascading effects of banking and financial sector crises.

$$\text{Capital Adequacy} = \frac{\text{Gross Capital}}{\text{Total Assets}}$$

3.5.2.2. *Asset Quality Ratio (AQR)*

Asset quality signifies the degree of financial strength and risks in a bank's assets, mainly loans and investments. The maintenance of asset quality is a fundamental feature of banking. A broad evaluation of asset quality is one of the most important components in assessing the current situation and future viability of a bank. Under CAMEL model of analysis, the asset quality ratios command significant recognition. Asset Quality ratio which is proxied by provisions for loans to total loans is adopted for analyzing the performance of commercial banks in Ethiopia.

$$\text{Asset Quality Ratio} = \frac{\text{Provision for Loan}}{\text{Total Loan}}$$

3.5.2.3. *Management Efficiency Ratio (MER)*

Management efficiency is another vital component of the CAMEL model that ensures the survival and growth of a bank. It is the management which sets vision and goals for the organization and ensures that it achieves them. In the process of achieving their goals, management takes certain crucial decisions depending on its risk perception. Hence, analysts and investors use this parameter to evaluate management efficiency as to assign premium to better managed banks and discount to poorly managed ones.

$$\text{Management Efficiency Ratio} = \frac{\text{Non Interest Expense}}{\text{Net Interest Income} + \text{Non Interest Income}}$$

3.5.2.4. Earnings Ratio (EARN)

Earnings quality reflects quality of a bank's profitability and its ability to earn consistently. The two most important parameters that are reviewed during inspection to assess the earning performance of the bank are the net interest margin and the net margin. It is proxied by the ratio of interest income to total asset.

Earnings Ratio = $\underline{\text{Net interest income}}$

$\qquad$ Total assets

3.5.2.5. Liquidity Ratios (LIQR)

For a bank, liquidity is a crucial aspect which represents its ability to meet its financial obligations. It is utmost important for a bank to maintain correct level of liquidity, which will otherwise lead to declined earnings. A high liquidity ratio indicates that the bank is more affluent. However, a bank needs to take care in hedging liquidity risk to ensure its own liquidity under all rational conditions. It is possible only when the percentage of funds ploughed in the investments with high returns is large. It is proxied by the ratio of total loan to total deposit.

Liquidity Ratio = $\underline{\text{Total loan}}$

$\qquad$ Total deposit

3.6.   Data type and collection

In order to analyze the performance of private commercial banks in Ethiopia, the study collected audited financial statements of fourteen private commercial banks (DB, AIB, BOA, WB, UB, NIB, LIB, CBO, ZB, OIB, BUIB, BRIB, AB, ADIB). The secondary data was collected through structured document reviews mainly from the records held by National Bank of Ethiopia and some from the banks themselves. The financial statements that is used includes the balance sheet, income statement and the cash flow statement of the commercial banks for the year 2013 to 2017. Furthermore, literature from various books, journals, news papers, magazines, and different web sites were used.

3.7.   Data analysis techniques

To comply with the research objective, the paper was primarily based on panel data, which was collected through structured document review. The collected panel data was analyzed using descriptive statistics, correlations and linear regression analysis. Mean values and standard deviations were used to analyze the general trends of the data from 2013 to 2017. A multiple linear regression model and t-statistics were used to determine the relative importance of each independent variable in influencing profitability. The study conducted regression analysis using EVIEWS 8 econometric software, to test the casual relationship between the firms' profitability and five determinant factors.

As stated by Brooks (2008) panel data is favored for situation often arises in financial modeling where we have data comprising both time series and cross-sectional elements. In addition, we 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. Accordingly, the study model focused on panel data technique that comprises both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the different Private commercial banks of Ethiopia (fourteen) and the time-series element is revealed by the period of study (2013-2017). Therefore, the collected panel data is analyzed using descriptive statistics, correlations and multiple linear regression analysis. The rational for choosing Ordinary Least Square (OLS) is that, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators (Brooks, 2008). Diagnostic checking is done to test whether the sample is consistent with the following assumptions. According to Brooks (2008), the assumptions of ordinary least squares are:

I. The errors have zero mean $(E(u_t) = 0)$
II. variance of the errors is constant $(Var(u_t) = \sigma^2 < \infty)$
III. Covariance between the error terms over time is zero $(cov(u_i, u_j) = 0$ for $i \neq j$
IV. Test for Normality $(u_t \sim N(0, \sigma^2)$
V. Multicollinearity Test

   If all the above assumptions are consistent with the sample, E-view result will be accurate and reliable.

Table 6. Variables Description in the Study

Variable Type		Proxy
Dependent Variable	Return On Asset (ROA)	Net Profit/Total Asset
Independent Variables	Capital Adequacy Ratio (CAR)	capital/Total Asset
	Asset Quality Ratio (AQR)	Provision for lon/Total Loan
	Management Efficiency Ratio (MER)	<u>Non interest expense</u> net interest income + non interest income
	Earnings Ratio (EARN)	Interest Income/Total Asset
	Liquidity Ratio (LIQR)	Total Loan/Total Deposit

Chapter Four

Findings and Discussions

This Chapter Deals with Results and analysis of the findings.

4.1.   Descriptive Statistics

Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables for fourteen private commercial banks from the year 2013 to 2017 with a total of 70 observations.   The table shows the mean. minimum, standard deviation and number of observations for the dependent Variable; banks performance (ROA), and independent variables (Capital adequacy, asset quality, management efficiency, earning and liquidity).

Table 4.1 Descriptive Statistics

	ROA	CAR	AQR	MER	EAR	LIQR
Mean	0.042203	0.158126	0.014170	0.516176	0.049574	0.603378
Maximum	0.372150	0.345730	0.088310	1.071220	0.077510	0.891150
Minimum	0.003290	0.012940	0.000000	0.019120	0.010710	0.433100
Std. Dev.	0.065431	0.051216	0.016129	0.167643	0.014170	0.074551
Observations	70	70	70	70	70	70

Source:- sample banks data computed using E-views 8

Table 4.1 presents a summary of the descriptive statistics of the dependent and independent variables for fourteen private commercial banks for a period of five years from 2013-2017 with a total of 70 observations. Key figures including mean, maximum, minimum and standard deviation values were reported.

The mean of independent variables; Capital adequacy, Asset quality, Management efficiency, Earning and liquidity ratios have positive values with the amount of 15.81, 1.41, 51.6, 4.9, and 60.33respectively. When we see the standard deviation value of the independent variable data set management efficiency ratio is more variable than the other independent variables having a value 16.7. This can be more understandable by looking the gap between the maximum and minimum value of the management efficiency. The maximum value in the data set of management efficiency ratio is 107.12 whereas the minimum value is 1.9.

The mean value of capital adequacy ratio of private commercial banks of Ethiopia as measured by total capital to total asset is 15.81 percent. The maximum capital maintained in the data set of the bank is 34.57 Percent where as the minimum capital maintained in the banks during the period is 1.29 percent.

The mean value of Asset Quality ratio as measured by the ratio of provision for loan loss to total loan in the data set is 1.41 percent. The maximum provision maintained in the data set 8.83 percent and the minimum is 1% of the total loan amount of the banks during the five year period. The standard deviation of the asset Quality 1.6 which is the second lowest among the Independent variable this shows there is low variability in the data of asset quality ratio.

In this study the management efficiency of the private Commercial Banks of Ethiopia measured by the ratio of Non Interest Expense to Net Interest Income and noninterest income during the five year on average is 51.61 percent. The maximum spending ratio in the data set 107.12 percent which means the bank spend almost double from the income generated where as the minimum was 1.91 percent. This gap is also reflected on the value of standard deviation of the management ratio i.e. 16.76 percent which is the highest variability than the other independent variables.

Earning calculated by the ratio of Net Interest Income to total asset during the study period has a mean value of earning of 4.95 percent. The maximum earning during the period was 7.75 percent and the minimum earning was 1.07 percent. There is low or no variation between the earning of the banks as it measured by standard deviation with the value 1.4.

The last Independent Variable is Liquidity, this is measured by the ratio of total loan to total deposit. The mean value of the data set of liquidity is 60.33 percent. The maximum value in this data is 89.11 and the minimum value is 43.31. This reveals that on average 60.33 percent of commercial banks deposit is converted in to the loan and the remaining balance helps to maintain the liquidity position of the banks.

4.2. 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 (association) between two variables (Brooks, 2008).The table below shows the correlation matrix among dependent and independent variables of this study.

Table 4.2 Correlation Analysis of Variables

	ROA	CAR	EAR	LIQR	MER	AQR
ROA	1.000000					
CAR	0.012680	1.000000				
EAR	0.032123	-0.263718	1.000000			
LIQR	-0.025786	0.200508	0.098022	1.000000		
MER	-0.193581	-0.062942	0.051335	0.241023	1.000000	
AQR	- 0.026342	-0.098155	0.026891	-0.131905	-0.077319	1.000000

Source: - annual report of sample banks data computed using E-views 8

The correlation result in Table 4.2 shows that asset quality ratio, management efficiency ratio and liquidity ratio have a negative correlation with return on asset. It refers that when these ratios increases, performance of Ethiopian private commercial banks will decrease. However, earnings ratio and capital adequacy ratios has positive correlation with return on asset which indicates that when both ratios decreases, performance of Ethiopian private commercial banks also decreases.

4.3. Regression Model Tests

For valid hypothesis testing and to make data available for reliable results, the test of assumption of regression model is required. Accordingly, the study has gone through the most critical regression diagnostic tests consisting of normality, multicollinearity, heteroskedasticity, autocorrelation and model specification tests.

4.3.1. Model Selection (Random Effect versus Fixed Effect Models)

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 a Hausman test the number of cross section should be greater than the number of coefficients to be estimated. But, in this study the numbers of cross section aren't greater than the number of coefficients to be estimated so it is not possible to conduct a Hausman test. Therefore a fixed cross-sectional effect is specified in the estimation so as to capture unobserved idiosyncratic effects of different commercial banks. Thus, to determine whether the fixed effects are necessary or not this study run the Hausman specification test as recommended by Brooks (2008) and others. The hypothesis for the model selection test was formulated as follow;

H0: Random effects model is appropriate.

H1: Fixed effects model is appropriate.

$\alpha = 0.05$

Decision Rule: Reject H0 if P value is less than significant level 0.05. Otherwise, do not reject H0.

Correlated Random Effects - Hausman Test

Equation: EQ01

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.697352	6	0.0332

Table4.3:Hausmane Test

source:- sample data of private commercial banks computed using E-views 8

The Hausman model selection test for this study has a p-value of 0.0332. Thus, the null hypothesis which is random effect model was rejected and the research used the fixed effect model.

According to Brooks (2008) it is often said that the random effects model is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a fixed effect model is more reasonable when the entities in the sample effectively represent the entire population. Thus, the sample for this study was not selected randomly instead it selected rationally that can effectively represent the total number of population, due to this it is appropriate for fixed effect model selection.

4.3.2.   Tests for the Classical Linear Regression Model (CLRM)

Assumptions

To maintain the data validity and robustness of the regressed result of the research, the basic assumptions must be tested for identifying any misspecification and correcting them so as to augment the research quality (Brooks,2008). There are different assumptions that need to be satisfied and that are tested in this study, which are: errors equal zero mean test, heteroscedasticity, autocorrelation, normality, multicollinearity and model specification test.

I. The errors have zero mean (E(ut) = 0)

This part shows the test for the assumptions of classical linear regression model (CLRM) namely the error have zero mean, heteroscedasticity, autocorrelation, normality and multicollinearity.

Relaying on Brooks (2008), the first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Hence, study's regression model has included a constant term, so that this assumption was not violated.

II. Test for heteroskedasticity assumption(var(ut) = σ2 <∞)

As indicated by Brooks (2008), this assumption requires that the variance of the errors to be constant. If the errors do not have a constant variance, it is said that the assumption of homoscedasticity has been violated. This violation is termed as heteroscedasticity. In this study test was used to test for existence of heteroscedasticity across the range of explanatory variables.

H0: The variance of the error is homoscedasticity

H1: The variance of the error is heteroscedasticity

Table 4.4 Heteroskedasticity Test

Heteroskedasticity Test: White

F-statistic	1.297025	Prob. F(10,59)	0.2534
Obs*R-squared	12.61518	Prob. Chi-Square(10)	0.2460
Scaled explained SS	8.033547	Prob. Chi-Square(10)	0.6256

Table 4.4: Heteroskedasticity test

Source:- sample data of private commercial banks computed using E-views 8

In this case, both the F- statistic and R-squared versions of the test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values are considerably in excess of 0.05 and also the third version of the test statistic, 'Scaled explained

SS', which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, suggests also that there is no evidence of heteroscedasticity. Thus, the conclusion of the test has shown that no evidence of heteroscedasticity and the null hypothesis is accepted.

III. Test for autocorrelation assumption (cov(ui, uj) = 0 for i ≠ j

This assumption stated that the covariance between the error terms over time (or cross sectionals, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are auto correlated or that they are serially correlated (Brooks, 2008).

The study used both Durbin-Watson (DW) and Breusch-Godfrey test for the existence of autocorrelation. In addition, lagged value of a variable (ROA (-1)) is used in this research in order to adjust the autocorrelation. As per Brooks (2008) lagged the value is simply the value that the variable took during a previous period. So from the regression result DW is 1.899 it is very close to two implying no serious evidence of serial correlation in the data

Breusch-Godfrey Serial Correlation LM Test:

H0: The errors are uncorrelated with one another

H1: The errors are correlated with one another

Table 4.5 Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.670063	Prob. F(6,53)	0.1466
Obs*R-squared	11.13015	Prob. Chi-Square(6)	0.0844

Table 4.5 Breusch -Godfrey serial correlation test

Source:- annual report of sample banks data computed using E-views 8

Both versions of the test; F- statistic and R-squared version of the test indicate that the null hypothesis of no autocorrelation should not be rejected, since the p-values are in excess of 0.05. The conclusion from both versions of the test described that the null hypothesis of no autocorrelation is not rejected.

IV. Test of normality (ut ~N(0, σ2)

As stated by Brooks (2008), if the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would be significant. This means that Jarque Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skeweness and kurtosis are ≈ 0 and ≈ 3 respectively. Normality assumption of the regression model can be tested with the Jarque- Bera measure. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how it is fat the tails of the distribution. If the Jarque Bera value is greater than 0.05, it's an indicator for the presence of normality (Brooks, 2008).

In addition, it is quite often the case that one or two very extreme residuals cause a rejection of the normality assumption. Such observations would appear in the tails of the distribution, which enters into the definition of kurtosis, to be very large. Such observations that do not fit in with the pattern of the remainder of the data are known as outliers. If this is the case, one way to improve the chances of error normality is to use dummy variables (Brooks, 2008). In line with this, the study included four dummy variables (D4113, D114, D1414 and D1317) to adjust the normality distribution. Thus, the figure below shows the result of normality by including four dummy variables.

The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

H1: Error term is not normally distributed

Figure 4.1 Normality Test Result
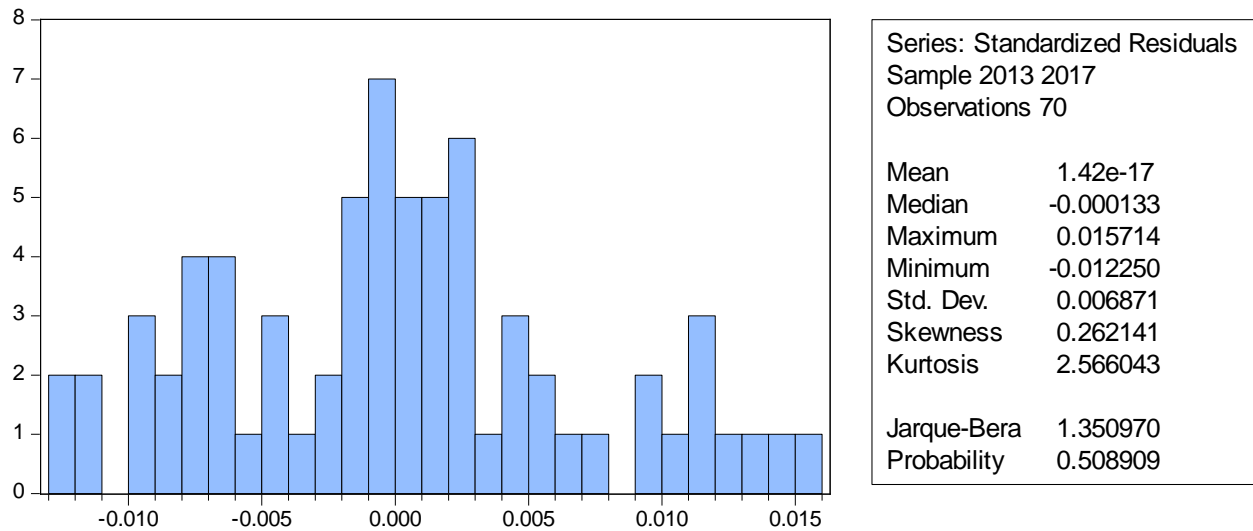
Source: - annual report of sample banks data computed using E-views 8

The above diagram witnesses that normality assumption holds, i.e., the coefficient of kurtosis was close to 3, skewness was zero and the Bera-Jarque statistic has a P-value of 0.5089 implying that the data were consistent with a normal distribution assumption. Based on the statistical result, the study failed to reject the null hypothesis of normality at the 5% significance level.

V. Test for multicollinearity

As referred by Brooks (2008), an implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. However, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multicollinearity.

Malhotra (2007) stated that multicollinearity problems exists when the correlation coefficient among explanatory variables are greater than 0.75. However, Brooks (2008) mentioned that if the correlation coefficient along with the independent variables is 0.8 and above, multicollinearity problems will exist.

Table 4.6 correlation matrix between independent variables

	CAR	EAR	LIQR	MER	AQR
CAR	1.000000				
EAR	-0.263718	1.000000			
LIQR	0.200508	0.098022	1.000000		
MER	-0.062942	0.051335	0.241023	1.000000	
AQR	-0.098155	0.026891	-0.131905	-0.077319	1.000000

Source: - annual report of sample computed using E-views 8

The method used in this study to test the existence of multicollinearity was by checking the Pearson correlation between the independent variables. The correlations between the independent variables are shown in table 4.7 above. All correlation results are below 0.75, which indicates that multicollinearity is not a problem for this study.

4.4. Regression Result

This section presents the empirical findings from the econometric output and interview results on effect of financial risk on insurance companies' performance in Ethiopia. Table 4.7 below reports regression results between the dependent variable (ROA) and explanatory variables. Under the following regression outputs the beta coefficient may be negative or positive; beta indicates that each variable's level of influence on the dependent variable.

Table 4. 7 Regression result

Dependent Variable: ROA

Method: Panel EGLS (Cross-section random effects)

Date: 05/29/18   Time: 19:51

Sample: 2013 2017

Periods included: 5

Cross-sections included: 14

Total panel (balanced) observations: 70

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.034619	0.007236	4.784471	0.0000
CAR	-0.025904	0.019296	1.342499	0.1845
EAR	0.174790	0.070875	-2.466164	0.0165
LIQR	0.023279	0.011235	2.072005	0.0426
MER	-0.030979	0.004836	-6.405453	0.0000
AQR	-0.022737	0.046556	0.488385	0.6271
DUM113	0.338458	0.005765	58.71205	0.0000
DUM1414	0.324782	0.005579	58.21353	0.0000
DUM114	0.276171	0.005721	48.27655	0.0000
DUM1317	0.024827	0.005769	4.303583	0.0001

Effects Specification			
		S.D.	Rho
Cross-section random		0.004526	0.4413
Idiosyncratic random		0.005092	0.5587

Weighted Statistics			
R-squared	0.992551	Mean dependent var	0.018970
Adjusted R-squared	0.991434	S.D. dependent var	0.057003

S.E. of regression	0.005276	Sum squared resid	0.001670
F-statistic	888.3604	Durbin-Watson stat	1.899354
Prob(F-statistic)	0.000000		

	Unweighted Statistics		
R-squared	0.988974	Mean dependent var	0.042203
Sum squared resid	0.003257	Durbin-Watson stat	1.231480

Source: - annual report of sample commercial banks data computed using E-views 8

This section discusses in detail the analysis of the results for each explanatory variable and their effect on Ethiopian private commercial banks profitability. Furthermore, the discussion analyzed the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the interpretation on the fixed effects model regression results.

P-value indicates at what percentage or precession level of each variable is significant except the R-squared capital adequacy ratio and asset quality ratio. the R- squared value measures how well the regression model explains the actual variations in the dependent variable (Brooks, 2008). R-squared statistics and the adjusted- R squared statistics of the model was 99.25% and 99.14% respectively. The adjusted R2 value 99.14% indicates that the dependent variable of return on asset (ROA) of Ethiopian private commercial banks is well explained by the independent variables that are listed in the model. Thus, these variables collectively are good explanatory variables to identify the effect of the CAMEL model on the profitability of Ethiopian private commercial banks . The regression F-statistic (888.36) and the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable.

Capital Adequacy Ratio

According to The result above, the capital adequacy ratio is negatively related with return on asset with a coefficient estimate of 0.025904. Holding other factors constant, a 100 per cent increase in the capital adequacy ratio of the bank decreases return on asset by 2.6 per cent and the P-value of CAR (i.e. 0.1845) reveals that it is statistically insignificant.

This result is in not line with the first hypothesis of the study which was stated as; there is a significant relationship between capital adequacy ratio and financial performance of private commercial banks in Ethiopia. Hence, we reject this hypothesis.

Asset Quality Ratio

According to the Table 4.7 above, the asset quality ratio is negatively related with return on asset with a coefficient estimate of 0.022737. Holding other factors constant, a 100 per cent increase in the asset quality ratio of the bank decreases return on asset by 2.3 per cent but the P-value of the AQR (i.e. 0.6271) reveals that it is statistically insignificant at 5% but significant at 10%. This is because as the asset quality ratio of the bank increases, it implies an increment in the nonperforming loan of the bank, which in turn reduces the net profit of the bank that can be generated from the total loan in the form of interest income. The lower the interest income implies the lower will be the net profit of the bank which in turn implies the lower will be the return on asset, as the return on asset of the bank is the proportion of net profit to total asset.

This result is in line with the second hypothesis of the study which was stated as; there is a significant relationship between asset quality ratio and financial performance of private commercial banks in Ethiopia. Hence, we accept this hypothesis.

Management Efficiency Ratio

According to Table 4.7 above, the management efficiency ratio is negatively related with return on asset with a coefficient estimate of -0.0030979. Holding other factors constant, a 100 per cent increase in the management efficiency ratio of the bank, measured by total cost to profit before tax, reduces return on asset by 0.3 per cent and the P-value of the MER (i.e. 0.000) reveals that it is statistically significant at 1 per cent level of significance. This is because as the management

efficiency ratio of the bank increases, it implies an increment in the total expense of the bank, which reduces the net profit of the bank that can be generated. The lower the net profit of the bank implies the lower will be the return on asset, as the return on asset of the bank is the proportion of net profit to total asset.

This result is in line with the third hypothesis of the study which was stated as; there is a significant relationship between earnings ratio and financial performance of private commercial banks in Ethiopia. Hence, we accept this hypothesis.

Earnings Ratio

According to Table 4.7 above, the earnings ratio is positively related with return on asset with a coefficient estimate of 0.17479. Holding other factors constant, a 100 per cent increase in the earnings ratio of the bank, measured by interest income to total asset, increases return on asset by 17.4 per cent and the P-value of the EARN (i.e. 0.0165) reveals that it is statistically significant. This is because as the earnings ratio of the bank increases, it implies an increment in the interest income of the bank, which in turn increases the net profit of the bank that can be generated. The higher the net profit of the bank implies the higher will be the return on asset, as the return on asset of the bank is the proportion of net profit to total asset.

This result is in line with the fourth hypothesis of the study which was stated as; there is a significant relationship between earnings ratio and financial performance of private commercial banks in Ethiopia. Hence, we accept this hypothesis.

Liquidity Ratio

According to Table 4 above, the liquidity ratio is positively related with return on asset with a coefficient estimate of 0.023279. Holding other factors constant, a 100 per cent increase in the liquidity ratio of the bank, measured by total loan to total deposit, increases return on asset by 2.32 per cent and the P-value of the LIQR (i.e. 0.0426) reveals that it is statistically significant. This is because as the liquidity ratio of the bank increases, it implies an increment in the total loan of the bank, which in turn implies an increment in the interest income of the bank that can be generated from the total loan in the form of interest income. The higher the interest income

implies the higher will be the net profit of the bank which in turn implies the higher will be the return on asset, as the return on asset of the bank is the proportion of net profit to total asset.

This result is in line with the fifth hypothesis of the study which was stated as; there is a significant relationship between earnings ratio and financial performance of commercial banks in Ethiopia. Hence, we accept this hypothesis.

Chapter Five

Summary, Conclusion and Recommendations

In this chapter the research findings are summarized, conclusions are drawn and recommendations are made for the concerned stakeholders.

5.1. Summary of Findings

The main objective of this study was to investigate the profitability of commercial banks of Ethiopia based on CAMEL approach ,to investigate the relationship between CAMEL variables with profitability measure Return on Asset (ROA). Balanced panel data of seventy observations from 2013 to 2017 of fourteen commercial banks was analyzed using multiple linear regressions method. Only secondary data collected from audited financial statement of the banks was used to investigate the performance of the private commercial banks.

Descriptive analysis result shows the capital adequacy mean value suggests 15.8% of the total asset of the commercial banks in Ethiopia were financed by shareholders contribution while the remaining 86% were financed from deposit. Asset quality ratio as measured by Provision for loan loss to total loan mean value was 1.4 Percent and it indicates almost all banks Provide consistent provision to manage credit risk of the bank.

Managerial efficiency ratio as measured by Non Interest Expense to Net Interest income plus Non Interest Income had mean value of 51.61 Percent which means most of commercial banks in Ethiopian spends 51.61 percent of their revenue for operation expense. Therefore, The importance of efficient overhead management cannot be overemphasize.

Earnings ratio in the study measured by the net interest income to total asset had the mean value of 4.95 Percent with the lowest standard deviation among other CAMEL factors of 1.41.This reflects Ethiopian commercial banks were applying consistent interest rate on the loan with few variation among banks. The Liquidity ratio was the final explanatory variable it was measured by total Loan to total deposit. During the study period the mean value was 60.33 Percent with the standard deviation of 7.45. This indicates 60.33 percent of the deposit of Ethiopian commercial

banks converted in to loan and 39.67 percent of the deposit maintained in the bank to manage the liquidity risk with few variability among the banks.

With regard to the relationship between the selected CAMEL model variable to profitability measures of Return on Asset (ROA) ;Capital adequacy ratio, asset quality ratio and management efficiency ratio had negative relation with the return on asset of the commercial banks and positive relation with Earning and liquidity ratio. This indicate that Capital adequacy, asset quality and management ratio had inverse relation with the ROA. Management efficiency ratio, liquidity ratio and earnings ratio were significant. Capital Adequacy ratio and Asset quality ratio were insignificant.

5.2. Conclusion

The Empirical CAMEL model findings regarding the elements of the model and profitability as measured by ROA suggested the following:

The relationship between capital adequacy Ratio and Profitability is negative. As to the level of significance the result shows capital adequacy ratio is insignificant for ROA.

The relationship between Asset quality ratio and profitability is negative . As to the level of significance the result shows Asset quality ratio is insignificant for ROA.

As to the relationship between Management efficiency ratio and profitability is negative and statistically significant. In addition to this the coefficient of the variable was relatively high for both profitability measures.

The result showed Positive relationship between Earning ratio and Profitability with strong statically significance.

The result showed positive relationship between Liquidity ratio and profitability and it is statistically significant.

5.3. Recommendation

Based on the findings of the study the following recommendations were forwarded. The study revealed Management efficiency, Earning ability and liquidity are the key driver of return on asset of private commercial banks in Ethiopia.

It is recommended that banks improve their capital level in order to improve profitability. This will enable the banks not only to be cushioned against exogenous shocks, but also to take full advantage of business opportunities as they come and increase their profitability,.

It is also recommended that banks take measures to decrease overhead costs and administrative costs in order to improve profitability.

The current study uses only some representative of financial ratios from factors of the CAMEL model, the financial ratios included in the research may not be exhaustive and enough to evaluate the bank's Capital adequacy, asset quality, management efficiency, earning ability and liquidity. Therefore future researcher is recommended to consider additional financial ratios.

The CAMEL model is useful rating tools for banking sectors, However, the tool can equally be applicable to other related financial institution Like Micro Finance Institution and Insurance Companies. Thus, future research is recommended to use the CAMEL model for such kind of institution.

The CAMEL model has also the sixth dimension referred as sensitivity to the market. Therefore, a future research would make relevant contribution if it considers the sixth dimension of the CAMEL model into the research, depending on the availability of the data.

The current study fully employed secondary data and the analysis was fully based on financial data. However, secondary data obtained from financial reports of banks or through National Bank can have potential bias. Thus, future research is recommended to substantiate and/or triangulate secondary data by primary data such as interviewing.

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