



ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ACCOUNTING AND FINANCE

**THE EFFECT OF ASSET AND LIABILITY MANAGEMENT ON THE
FINANCIAL PERFORMANCE OF PRIVATE BANKS IN ETHIOPIA**

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Declaration

I, MekuanentChanie, declare the thesis entitled ''*The Effect of Asset and Liability Management on the Financial Performance of Private Banks in Ethiopia*'' conducted for partial fulfillment of masters of Science is my original work carried out with my advisor and all source of material that I used to conduct the research have been acknowledged.

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List of acronyms

AB	Abay Bank
AdiB	Addis International Bank
ALCO	Asset & Liability management committee
ALM	asset Liability management
BriB	Birhan International bank
BuiB	Bunna international Bank
BoA	Bank of Abyssinia
CAMELS	Capital Adequacy, Asset quality, Management efficiency, Earning Quality, Liquidity, sensitivity
CBE	Commercial Bank of Ethiopia
CBO	Cooperative bank of Oromiya
CLRM	Classical Linear regression model
CQ	credit quality
DB	Dashen Bank
DGB	Debut Global Bank
EB	Enat Bank
FEXRT	Foreign exchange rate
GDP	Gross domestic product
HB	Hibret Bank
IRSGR	Interest rate sensitivity gap ratio
LIB	Lion International Bank
LQ	Liquidity
NBE	National Bank
NIB	Nib International Bank
NPL	Non-performing loan
OLS	Ordinary least square
OIB	Oromiya International Bank
ROA	Return on Asset

ROE Return on Equity
RSA Rate sensitive asset
RSL Rate sensitive liability
SCA Statistical cost accounting
WB Wegagen Bank
ZB Zemen Bank

Abstract

The aim of study was to examine the effect of asset liability management on performance of Ethiopian private commercial banks from 2014 to 2020. In this research, the banks performance were measured by ROA and ROE while the ALM components that could affect performance were credit risk, liquidity risk, operational risk, market risk the composition of the banks' asset they hold. For that purpose, panel data was collected from NBE covering period of 2014 to 2020. These panel data was analyzed by using Stata 14.2 econometric software. Quantitative research approach and explanatory research design was used to explain causal relation between variables. Furthermore, the study used multiple linear regression model with Generalized Least square estimation method. The findings of the research implied that, CA composition was dropped due to it causes multicollinearity problem. Fixed asset composition and credit quality have no significant effect on performance. The other variables such as LATD and RSAL had negative and significant effect, while TLATD has positive effect on ROE. Foreign exchange rate has positive and significant effect on both ROA and ROE while OEOI has negative effect. LATD and RSAL have positive and significant effect, but TLATD and RSAL were not significant determinants of ROA. The study concluded that fixed asset composition, loan to deposit ratio and non-performing loan were not significant determinants of Ethiopian private banks performance. On the other hand, foreign exchange rate, liquid asset to deposit ratio operational efficiency and interest rate risk were found significant determinants of Ethiopian private banks performance.

Key words: Asset Liability Management, Private Banks, Performance, Bank Specific Factors, Asset Composition.

Chapter one

Introduction

1.1 Background of the study

Asset-Liability management is the practice of managing a business so that decisions and actions taken with respect to assets and liabilities are coordinated to ensure effective utilization of the company's resources to increase its profitability. ALM can also be defined as the ongoing process of formulating, implementing, monitoring, and revising strategies related to assets liability and profitability to achieve an organization's financial objectives given the organization's risk tolerance and other constraints. The objective of asset-liability management is to maximize profit through efficient fund allocation given an acceptable risk structure. Hence, asset-liability management is the focus of matching assets and liabilities in terms of maturity and interest rate sensitivity to minimize interest rate and improve profitability. Asset-Liability management is relevant to and critical for, the sound management of the finances of any organization that invests to meet its future cash flow needs and capital requirements. Traditionally, ALM has focused primarily on the risks associated with changes in interest rates. Currently, however, credit management considers a much broader range of risks including equity risk, liquidity risk, legal risk, currency risk, and sovereign or country risk (Tee, 2017).

ALM is a financial (analytic) tool for decision-making that sets out to maximize stakeholder value. Its overall objective is to make judicious investments that increase the value of capital, match liabilities and protect from disastrous financial events. An integrated ALM model set out to find the optimal investment strategy by considering assets and liabilities simultaneously. Simply stated, the purpose of such an approach is to reduce risk and increase returns. ALM is a future-oriented process involving simultaneous asset and liability management to measure, monitor, and control the impact of changing interest rates on the bank's earnings, asset value, liquidity, and capital requirements (Novickyte & Petraityte, 2013)

Most of the African banks have introduced new modifications of advancing with better-quality technology intended to increase performance, which also affects most banks as they prepare a complicated balance sheets, which has greater risks in assets and liabilities. Most banks adopted new advancing strategies for both small and medium businesses to improve performance has led to loan default henceforth credit risk takes a major portion of financial risk in Africa (Zhongming, Frimpong & Gouping, 2019)

Zhongming et al (2019) stated as there are different kinds of risks in banks but the three main strands of risk exposure are credit risk, interest rate risk, foreign exchange risk, operational risk, and liquidity risk. So ALM in the bank is managing the mismatch between asset and liability is known as asset-liability gap so there need to have a genuine risk management culture in the bank, the ALM in recent years has become a tool of integrated analysis of assets and liabilities and value not only the interest rate risk but the liquidity risk, solvency risk, firm strategies, and asset allocation as well. The landscape of asset-liability management for the financial sector is ever changing and the scope of asset liability management activities has widened. Banking institutions have adopted Asset liability management strategies to address key risks such as; interest rate risks, liquidity risks, and foreign exchange risks.

Asset liability management enables a firm to balance its liabilities and assets. This in turn minimizes financial risks and hence improves profitability. ALM guides a firm in making investment decisions. This is because the firm is able to allocate sufficient funds for investment as a result of adoption of liquidity management best practices and argues that firms that maintain a proper structure of their balance sheet record high profitability compared to those firms who fail to maintain proper balances of assets and liabilities. This is achieved by effective risk management which plays an integral role in addressing financial risk since all risk cannot be eliminated but it is the responsibility of risk managers to identify their risk levels and know which level can be controlled or accepted (Tesfaye & Akuma, 2020)

According to Tamiru (2013), the traditional ALM programs focus on interest rate risk and liquidity risk because they represent the most prominent risks affecting the organization's

balance sheet (as they require coordination between assets and liabilities). However, ALM also now seeks to broaden assignments such as foreign exchange risk and credit risk; however, the main objective of ALM is not to eliminate risk. Rather, it is to manage risks within a framework that includes self-imposed limits

Financial performance refers to a firm's ability to generate new resources from day-to-day operations over a given period. It involves enhancing shareholders' wealth and profit-making which are among the major objectives of a firm equity invested or found on the balance sheet. It is the rate of return to shareholders or the percentage return on each unit of equity invested in the bank (Mwaniki&Omagwa, 2017).

The structure of asset is the ascertainment of allocation of funds to each sub-division of assets both in current or non-current form. Asset composition reflects the financial decisions of management to allocate corporate resources to various fixed or non-current assets and to current assets to maximize financial performance and firm value (Syamsudin (2007) cited on (Umobong and Agburuga, 2019).

According to Wagdi, Hasaneen & Abouzeid (2019), financial performance is measured by properly establishing the association between the items on the balance sheet and profit and loss account. The process of establishing relevant associations is referred as financial analysis which involves calculating of financial ratios, thus it also called ratio analysis. Several ratios can be computed in assessing profitability. Return on assets (ROA) is one of the major ratios that indicate the profitability of a bank. It measures the ability of the bank management to generate income by utilizing company assets at their disposal In other words, the ratio indicates how much net income is generated on each unit of assets thus the higher the ROA, the more profitable the bank. Another related ratio is return on equity (ROE) which measures how much profit a company earned compared to the total amount of shareholders. Return on assets, return on equity and net interest margins are measures are performance (Sufian, & Habibullah, 2009; Naceur & Omran, 2011).

Profit is the ultimate goal of commercial banks. All the strategies designed and activities performed thereof are meant to realize this grand objective. To measure the profitability of commercial banks there are variety of ratios used of which Return on Asset, Return on Equity, and Net Interest Margin are the major one (Ongore & Gemechu, 2013).

1.2 Statement of the Problem

At the time of this full-fledge competitive environment, especially, in Ethiopian banking industry where taking away customers from each other is a normal pattern of all banks, adopting appropriate management of assets and liabilities is not doubtful. Banks shall also give attention for this issue as they give for the deposit collection and customer hunting as possible because unless deposit collected is employed in a profitable manner it is the main cause for the collapse of the banks.

ALM involves the management of the total balance sheet dynamics and it involves quantification of risks and conscious decision making with regard to asset-liability structure to maximize the interest earnings within the framework of perceived risks. The main objective of ALM is not to eradicate or eliminate risk, but to manage it in a way that the volatility of net interest income is minimized in the short run and the economic value of the bank is protected in the long run. Banking institutions have adopted Asset liability management strategies to address key risks such as; interest rate risks, liquidity risks, and foreign exchange risks (Gutahu, 2012).

Interest rate risk management focuses on reducing interest rate risk associated with a bank's entire portfolio. Even though, interest income is the main source of profit for Ethiopian banks, where majorities of their income is funded income, it is also the source of interest expense since they pay for depositors.

Various studies had been conducted on the financial performance of banks globally. Looking at the findings of some of the studies conducted outside Ethiopia to indicate the gap both globally and among the researchers conducted in Ethiopia; (Mulualem, 2015); Bulti, 2019) on their evaluation of the performance of commercial banks using panel data and multiple regression reveals that earning quality and liquidity shows a positive relationship with both ROA and ROE as profitability measures performance whereas Asset Quality is insignificance. Alongside, Melaku & Melaku, (2017); Wendwesen, (2018) also conducted a study to assess the financial performance of Ethiopian commercial banks by using static panel data and found that only liquidity shows a positive relationship with

performance while asset quality has no relation by using CAMEL approach. However, Melaku & Melaku (2017); Wendwesen (2018) stated that earning quality has negative and significant relationship. Anteneh (2018) also revealed that Asset quality negative and liquidity positive were major determinants of performance but earning quality was not insignificant for performance measured by ROA and ROE.

In addition, Dawit (2016); Ermiyas (2016) concluded that asset quality and earning quality have negative and significant on ROA. Dawit (2016) further stated that asset quality, earning quality, has negative and significant on ROE; while earning quality, liquidity, and exchange rate were significant and negatively related only to ROE on the study to evaluate the performance of seven Ethiopian banks random effect model and panel data of 2000-2014.

Other research findings also conducted that; Ongore & Gemechu, (2013); Saleh & Afifa (2020), and Ermiyas (2016), showed that liquidity has no significant relationship with profitability. Saleh & Afifa (2020); Muriithi, G., Waweru, M., Muturi, M. (2016); M.H Mohammad Adam (2014) and Engidawerk (2014) further indicated credit risk has negative and significant impact on bank profitability.

Alike of research conducted outside, albeit only few researches found in Ethiopia, researches has also been conducted by taking macro-economic factors as the determinants of bank performance but findings are found inconsistent. Exchange rate, as a paradigm; Wendwesen (2018) stated fluctuations of exchange rate have insignificant impact on profitability. Tadesse (2018) concluded exchange rate is positively and significantly affects bank performance. On the contrary, Girum (2020) concluded exchange rate has negative and significant effect on performance.

Same researches also conducted outside Ethiopia by taking macro-economic factors as the determinants of bank performance but the findings have paradoxes. Among these; Abbas, E. & Elfaki, O. (2019); Elhussien (2019), and Muriiti, G. et al (2016) found that fluctuations of exchange rate have insignificant impact profitability of banks' ROA as a measure of profitability. But, Lagat & Nyandema (2016); Isaac (2015), and Eze (2014) observed that exchange rate is positively and significantly affecting bank performance. Muriiti G. et al (2016) stated that interest rate is major determinant of performance of banks whereas;

Tee (2017) concluded that interest rate is not a significant determinant of the banks' profitability.

Moreover, even though no research is found in Ethiopia which is conducted on ALM by taking asset composition as an independent variable, different researches had conducted abroad on asset composition, with different variables considered, the result they reached is found different although these researches were not undertaken on ALM. For instance:-

Umobong and Agburuga, (2019) and Gladys et al, (2017) found that long-term investment has a positive and significant relation to ROA and ROE. However, Umobong and Agburuga, (2019) plant property and equipment have negative and significant relation only with ROE and; intangible asset and current assets have a positive and significant relation to ROA and ROE. In the contrary Gladys Mwaniki and Job Omagwa, (2017) revealed that plant property and equipment has positive and; intangible asset and current assets has negative and significant relation to ROA and ROE has a negative impact on both ROA and ROE.

Razman B. et al (2021), undertake a study to assess the effect of non-current assets on the performance of firms in the Malaysian construction sector by taking fixed asset turnover, total asset turnover, and asset tangibility as an explanatory variable and; and found fixed asset turn over and total asset turnover has a positive impact on ROA and ROE.

Therefore, this study aimed to fill this and the above knowledge contentions.

To meet the financial performance of any bank, bank-specific financial performance determinants (bank-specific risk) such as credit risk, liquidity risk market risk, and operational risk Seblewengel, (2018), Syafi'I & Rusliati, (2016), and Zhongming et al., (2019) in accordance to ALM should adequately be placed. On top of that, as far as the researcher's knowledge is concerned, no research was conducted on the effect of asset-liability management on the financial performance of Ethiopian commercial banks by taking bank-specific financial performance determinants (bank-specific risk) ROA and ROE as a measure of performance of banks. Moreover, no research was found conducted on the effect of asset-liability management on financial performance in Ethiopia by taking interest rate and exchange rate as an explanatory variables. As far as ALM is the management of the total balance sheet dynamics; and asset composition has to be managed well, the researcher is attracted to this issue in addition to bank-specific risks. Most research that

the researcher reviewed had focused only on performance with CAMEL/S components and they didn't consider the effect of asset composition into account. Apart from bank specific the researcher believed to incorporate the effect of asset composition since the subject matter is asset and liability management. In Ethiopia, no research has found that takes asset composition into account. This issue attracts the researcher's attention to give a focus in addition to above mentioned bank-specific factors. Currently, Ethiopian banks have a package of diaspora accounts to collect foreign currency deposits, and retention accounts credited from export proceeds which are credited only by foreign currency. In addition to this, banks have provided loans for those Diasporas to be collected with foreign currency. Most of the banks, as a nature, have also been engaged in cross-border trade to be effected and collected with foreign currency. These all is prone to exchange rate fluctuation risk. Having this and other events into account, foreign exchange rate effect asset and liability in turn on performance and it has to be addressed. This study is, therefore, mainly dedicated to examining explanatory variables such as; asset composition, credit quality, liquidity management, market risk, and operational efficiency.

1.3 Objective of the study

1.3.1 General objective

The study was focused on the effect of asset and liability management on performance of private banks in Ethiopia.

1.3.2 Specific objectives

The specific objective of this study was to find out;

- The effect of credit quality on the performance of Ethiopian private banks;
- The effect of liquidity on the performance of Ethiopian private banks;
- The effect of interest rate sensitivity on the performance of Ethiopian private banks;
- The effect of exchange rate on the performance of Ethiopian private banks;
- The effect of operational efficiency on the performance of Ethiopian private banks.
- The effect of fixed assets on the performance of Ethiopian private banks.

- The effect of current assets on the performance of Ethiopian private banks.

1.4 Hypotheses of the Study

Based on the previous empirical studies conducted on performance and ALM, the following prior expectations are formulated. The results from the literature review are inputs to establish expectations for the relationship of the different determinants. Hence, based on the objective, the present study hypothesized as:

HP1: There is a significant and negative effect of credit risk on performance.

HP2: There is a significant and positive effect of total loan and advance to total deposit ratio on performance.

HP3: There is a significant and positive effect of liquid assets to total deposit ratio on performance.

HP4: There is a significant and negative effect of interest rate sensitivity on performance.

HP5: There is a significant and positive effect of exchange rate on performance.

HP6: There is a significant and negative effect of operational efficiency on performance.

HP7: there is a significant and positive effect of current assets on performance.

HP8: there is a significant and positive effect of fixed assets on performance.

1.5 Significance of the Study

This study has been given additional insights for bank managements by finger out determinant factors of ALM which affects their performance and as to revise the way by which they are used. This also would provide investors information about the banks and helps them to look for banks that are on best performance. This study would also be used to a standing point to conduct further research on the subject matter.

1.6 Scope and Limitation of the Study

Even though, bank performance is believed to be affected by enormous factors this study limited only to the effect of asset and liability. Accordingly, the study has examined: asset compositions, non-performing loans for credit risk, total liquid asset to total deposit and

total loan and advance to total deposit; and total loan and advance to total deposit for liquidity, operational income to operational expense for operational efficiency, interest rate and foreign exchange rate for market risk of all 16 private banks in Ethiopia covering a period of 2014-2020. This is due to fully compiled and organized data for the newly established banks were found starting from 2014. The study uses only secondary data. Therefore the finding is dependent only on the accuracy of the data collected from the source.

1.7 Organization of the Paper

The study has been organized into five chapters. The first chapter is the introductory part and it will incorporate background of the study, statement of the problem, general and specific objectives of the study, hypothesis, significance of the study, and scope and limitation of the study. Chapter two has contained a review of related literature and conceptual framework in the subject matter. The third chapter included different elements of methodology, such as study area, research approach, research design, data collection, population and sampling, research instruments and data analysis. Chapter four contained the analysis of the results and discussion. Finally, the conclusions and recommendations have been presented in chapter five.

Chapter Two

Literature Review

2.1 Introduction

Under this section, overview, definition, theoretical and empirical ground will be presented which support the relation between ALM and performance. Determinant factors which affect performance of banks which are related to asset and liability were also defined in this section. The theories covered will be currency base theory, liquidity preference theory, commercial loan theory, and liability management theory.

2.2 Overview of Ethiopian Banking Industry

According to the NBE, an agreement made in 1905 among Emperor Minilik II and Mr. MaGillivray, a representative of the British-owned National Bank of Egypt, marked the beginning of modern banking in Ethiopia. Following the agreement, the Emperor founded the first bank, the Bank of Abyssinia, in February 16, 1906. The Egyptian National Bank was in charge of the Bank, and the following rights and concessions were agreed upon when Bank of Abyssinia was founded.

The capital of the Bank was agreed to be Pound Sterling 500,000, including one being subscribed and the rest being obtained by selling shares in main cities such as London, Paris, and New York. The Bank was given full authority to issue bank notes and monitor coins that were to be legal tender and freely exchangeable against gold and silver under the bank's supervision, as well as to establish silver coins and abolish the Maria Theresa. Land was given to the Bank free of charges & permitted to build offices and warehouses. Government and public funds were to be deposited with the bank and all payments to be made by checks. The government promised not to allow any bank to be established in the country within the 50-year concession period.

Generally, during its short existence, the Bank of Abyssinia performed limited activities such as maintaining public accounts, financing some exports, and performing various duties for the government. In addition, the Bank faced tremendous pressure to operate inefficiently and purely for profit and entered into an agreement to abandon operations

and be liquidated to withdraw the bank from foreign control. Thus, in 1931, the Bank of Abyssinia was legally replaced by the Bank of Ethiopia shortly after Emperor Haile Selassie came to power.

The new Bank, Bank of Ethiopia, was a purely Ethiopian institution and was the first indigenous bank in Africa and established by an official decree on August 29, 1931 with capital of £750,000. Ethiopian government owned 60 percent of the total shares of the Bank and all transactions were subject to scrutiny by its Minister of Finance.

Bank of Ethiopia took over the commercial activities of the Bank of Abyssinia and was authorized to issue notes and coins and continued operation until the Italian invasion in 1935. After victory, State Bank of Ethiopia commenced full operation after 8 months of preparatory activities and replaced the activities of bank of Ethiopia including deal in foreign currency. Later, the Ethiopian Banks and Currency Act came into effect in 1963 separating the commercial banking and central banking functions creating the National Bank of Ethiopia and the Commercial Bank of Ethiopia. In addition, it allows foreign banks to operate in Ethiopia by limiting their maximum ownership to 49%, while the remaining balance will be held by Ethiopians. The National Bank of Ethiopia with more power and functions commenced operations in January 1964.

Following the declaration of socialism in 1974, the government extended its control over the whole economy and nationalized all large corporations and all private and foreign commercial banks formed the sole commercial bank in the country till the establishment of private commercial banks in 1994.

Following the demise of the Dergue regime in 1991, which ruled the country for 17 years under the rule of a command economy, the EPRDF declared a liberal economic system. In line with this, the Monetary and Banking Proclamation of 1994 established the national bank of Ethiopia as a judicial entity, separated from the government, and outlined its main functions.

Monetary and Banking Proclamation No.83/1994 and the Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for investment in the banking sector. Consequently, shortly after the proclamation, many banks emerged and are still emerging.

Table 2.1 List of banks with their establishment period and paid up capital.

Banks	Year of establishment	Paid up capital in billions of birr at 2020
Awash International Bank	1994	5.87
Dashen Bank	1995	3.5
Bank of Abyssinia	1996	3.1
Wegagen Bank	1997	2.9
United Bank	1998	3.2
Nib International Bank	1999	3.4
Cooperative Bank of Oromia	2004	3
Lion International Bank	2006	2.2
Zemen Bank	2008	1.8
Oromia International Bank	2008	3.7
Debut global Bank	2012	1
Enat Bank	2012	1.4
Birhan International bank	2009	2.4
Bunna International Bank	2009	2.1
Addis International Bank	2011	1
Abay Bank	2010	2.2

Source: Authors' summarization from history and banks websites

2.3 Theoretical Framework

2.3.1 Currency Base Theory

This theory was developed by Aliber (1971), and the currency base theory is based on imperfect foreign exchange and capital markets. He postulates that the internationalization of firms can best be explained in terms of the relative strength of different currencies, such as firms from a strong country and those from a weak one. As a result, the income of a firm in a strong-currency country is capitalized at a higher rate, implying that such a firm will acquire a large portion of income generation in the corporate sector of a weak-currency country (Girum, 2020).

2.3.2 Liquidity Preference Theory

Liquidity preference theory which is also known as liquidity preference hypothesis was first articulated by Keynes (1989). This theory describes that Investors need higher interest rate on securities with long-term maturities because they would prefer to hold cash, which involves less risk. The significance of this theory is that firms should maintain an optimum level of liquidity to able to grasp opportunity that promise higher return in the future and firm's works towards the balance through proper management of their asset and liability to achieve capital requirement and future higher return investment which means in order to be profitable and stable in the sector its necessary to manage and coordinate asset and liability , for finance sector it is a key tools to achieve efficiency and growth (seble, 2020). Accordingly, liability preference theory states that liquidity has positive effect on profitability.

2.3.3 Commercial Loan Theory

The commercial loan, or the real bills doctrine theory, which originated in England during the 18th century, states that a commercial bank should forward only short-term self-liquidating productive loans to business organizations. This is because, since they acquire liquidity, they can automatically liquidate themselves, as they mature in the short run and has productive ambitions, there is no risk of their running into bad debts, and such loans are high in productivity and earn income for the banks. Self-liquidating loans are those meant to finance the production and evolution of goods through the successive phases of production, storage, transportation, and distribution. They are considered self-liquidating loans. The commercial loan theory has certain defects. First, if a bank declines to grant a loan until the old one is repaid, the disheartened borrower will have to minimize production, which will ultimately affect business activity. If all the banks pursued the same rule, it may result in a reduction in the money supply and higher costs in the community. As a result, it makes it impossible for existing debtors to repay their loans on time. On the other hand, this theory holds that loans are self-liquidating under normal economic

circumstances. But if there is depression, production and trade deteriorate, and the debtor fails to repay the debt at maturity. In addition to this, this theory disregards the fact that the liquidity of a bank relies on the salability of its liquid assets and not on real trade bills. It assures safety, liquidity, and profitability. The bank need not depend on maturities in times of trouble. Finally, the general demerit of this theory is that no loan is self-liquidating. A loan given to a retailer is not self-liquidating if the items purchased are not sold to consumers and stay with the retailer (Emmanuel, 1997), as cited by Guthua, (2013).

2.3.4 The Liability Management Theory

Since the early 1960s, the loan portfolios of commercial banks have been affected by the emergence of a new theory, which became known as the liability-management theory. This is one of the important liquidity management theories and says that there is no need to follow old liquidity norms like maintaining liquid assets, liquid investments etc. Lately, banks have focused on the liabilities side of the balance sheet. According to this theory, banks can satisfy liquidity needs by borrowing in the money and capital markets. The fundamental contribution of this theory was to consider both sides of a bank's balance sheet as sources of liquidity, as cited (Emmanuel, 1997) by (Seblewongel, 2017).

According to this theory, there is no need to go to a self-liquidating loan and keep liquid assets because they can borrow money in the money market at the time they need it. Banks can create additional reserves by creating additional liabilities against themselves from different sources. These sources are by issuing time certificates of deposit, borrowing from other banks and the central bank by issuing additional shares and ploughing profit back. However, most of these sources are applied during normal economic circumstances. For instance, during a depression, the interest rate on the market is greater than that set by the central bank. And also, during abnormal economic conditions, all banks prefer to hold their cash rather than lend it. As a result, during this economic circumstance, the banks' liquidity might be affected, which, in turn, affects profitability (Bibow, 2005).

2.4 Asset-Liability Management and Financial Performance of Commercial Banks

As Banks serve primarily as a medium that bridges the gap between surplus and deficit units in an economy, they are very vital organizations that help in the accomplishment of socioeconomic activities undertaken by individuals, business organizations, and even sovereign states (Seble, 2018).

It is obvious that a sound and profitable banking sector is able to withstand negative shocks and contribute to the stability of the financial system. Moreover, commercial banks play a significant role in the economic growth of countries. Through their intermediation, function banks play a vital role in the efficient allocation of resources in countries by mobilizing resources for productive activities. They transfer funds from those who do not have productive use of them to those with productive ventures. In addition to resource allocation, good bank performance rewards the shareholders with a sufficient return on their investment. When there is a return, there will be an investment, which, in turn, brings about economic growth. On the other hand, poor banking performance has a negative repercussion on economic growth and development. Poor performance can lead to runs, failures, and crises (Ongore & Gemechu, 2013).

In other words, it deals with the optimal investment of assets in view of meeting current goals and future liabilities. It is related to the management of the risks associated with liquidity mismatch, interest rates and foreign exchange movements (Tamiru, 2013).

According to Novickyte & Indrė (2014), ALM deals with the optimal investment of assets in view of meeting current goals and future liabilities. Definitions of assets, liabilities, and risks are specific to each institution, but, very generally, assets may be viewed as expected cash flows, and liabilities as expected cash outflows. Although short term risks arising from the possibility that an institution's assets will not cover its short-term obligations, they are important to assess and quantify, ALM is usually conducted from a long-term perspective.

He also indicated that, summarize, the ALM simply combines several bank portfolios' assets, liabilities, and the difference between the banks received and paid interest into a single coordinated process. In other words, the main feature of the ALM is that it coordinates and not breaks the total bank's balance sheet management. ALM as a planning tool has evolved from the need to ensure the asset and liability time overlap for different time periods. The main purpose of ALM is to connect different bank activities into a single unit, facilitating liquidity and balance sheet management, which is crucial for ensuring the normal operation of the bank, service delivery, and consistent and profitable growth of the bank. ALM provides timely identification of potential problems and risks of operating in the bank's balance sheet and income. The most common problem occurs when the bank's liability costs are rising faster than revenues from the asset, or when falling interest rates mean asset income is declining faster than the liability side.

The NBE stated in Directive No. SBB/57/2014 that any licensed commercial bank must maintain liquid assets equal to at least 15% of its net current liabilities. Commercial banks shall establish an Asset & Liability Management Committee (ALCO) to manage their assets, liabilities, and off-balance sheet items so as to fully meet the bank's contractual commitments.

Sound asset liability management is a prerequisite for a financial institution's stability and continuing profitability, while deteriorating asset liability management is the most frequent cause of poor financial performance and condition. Commercial Banks must therefore ensure that the management of asset performance is efficient and effective. On that basis, it is simply good business to put asset liability management at the 'front end' by managing it strategically. The objective of asset liability management is not to eliminate risk. Rather, it is to manage risks within a framework that includes self-imposed limits. In setting limits for particular types of risk, a bank should consider its solvency position and its risk tolerance. Limits should be set after careful consideration of corporate objectives and circumstances, and should take into account the projected outcomes of scenarios run using a range of plausible future business assumptions. Within these limits, risks can be reduced if this is cost effective, or increased, if justified by the expectation of enhanced returns and the availability of additional capital, without endangering the capacity of the bank to meet its commitments to stakeholders (Mukasinayobye & Mulyungi, 201).

Asset-Liability management is the practice of managing a business so that decisions and actions taken with respect to assets and liabilities are coordinated in order to ensure effective utilization of a company's resources to increase its profitability. Asset-liability management can also be defined as the ongoing process of formulating, implementing, monitoring, and revising strategies related to assets and profitability to achieve an organization's financial objectives given the organization's risk tolerance and other constraints. The objective of asset-liability management is to maximize profit through efficient fund allocation given an acceptable risk structure. It can also be said to deal with the optimal investment of assets in view of meeting current goals and future liabilities. Hence, asset-liability management is the focus of matching assets and liabilities in terms of maturity and interest rate sensitivity to minimize interest rates and improve profitability. Asset-liability management is relevant to, and critical to, the sound management of the finances of any organization that invests to meet its future cash flow needs and capital requirements. Traditionally, asset-liability management has focused primarily on the risks associated with changes in interest rates. Currently, however, credit management considers a much broader range of risks, including equity risk, liquidity risk, legal risk, currency risk, and sovereign or country risk (Tee, 2017).

Financial risks are classified into traditional risks and banking risks. Traditional risks include traditionally accepted threats arising from balance sheet and income statement structures, which include credit and solvency risks. Treasury risks are related to the capital of the business and include liquidity, interest rates, currency risk, and market risks. The banking sector has emphasized the significance of financial risk management in the recent past. This is because they influence business activities to a great degree (Zhongming et al., 2019).

Financial risk includes credit risk, liquidity risk, and market risk, which, together, contribute to the volatility of financial performance. Banks' financial viability and long-term sustainability are threatened by financial risk. Market risk, credit, liquidity, and

operational risks possess a major challenge despite growth in the sector (Muriithi et al, 2016).

Asset liability management in deposit money banks is determined by the ability of the banks to retain capital, absorb loan losses, support future growth of assets and provide a return to investors. The largest source of income for the bank is interest income from lending activity, less interest paid on deposits and debt. But it should be noted that banks cannot give out loans without deposits, and banks make their profit primarily through loan creation. A bank cannot make a profit without credit administration, and there cannot be credit administration without deposits. For a bank to attain the same objectives, it has to ensure proper asset liability management, including liquidity risk management, interest rate risk management, and credit risk management. It is often argued that macroeconomic variables affect banks' profitability (Olusegun, 2016).

Profit is the ultimate goal of commercial banks. All the strategies designed and activities performed therein are meant to realize this grand objective. However, this does not mean that commercial banks have no other goals. Commercial banks could also have additional social and economic goals. However, the intention of this study is related to the first objective, profitability. To measure the profitability of commercial banks, a variety of ratios are used, of which Return on Asset, Return on Equity and Net Interest Margin are the major ones (Ongore&Gemechu, 2013).

2.5 Determinants of Bank Performance

The determinants of a bank's performance can be classified into bank specific (internal) and macroeconomic (external) factors (Ongore & Gemechu, 2013; Tesfaye & Ifa, 2020).

The internal factors are individual bank-specific characteristics that affect the bank's performance. These factors are basically influenced by the internal decisions of management and the board. External factors are sector-wide or country-wide factors that are beyond the control of the company and affect the profitability of banks (Tefaye, 2014).

The main objective of this study is to identify the factors that have an effect on banks' performance. Even though banking sector could be affected by other macro-economic factors, this study incorporated only interest rate and exchange rate. This is because these factors directly affect their balance sheet items and the aim of this paper was to examine the effect of bank-specific balance sheet risks on performance. Accordingly, for the purpose of this study, liquidity, credit risk, and operational quality are included in the internal factors, and interest rate sensitivity and foreign exchange exposure are included in the external factors.

2.5.1 Internal Variable

Liquidity and its effect on performance

Liquidity refers to the ability of the bank to fulfill its obligations, mainly those of depositors. The most common financial ratios that reflect a bank's liquidity position, according to the above author, are customer deposit to total assets and total loan to customer deposits (Ongore & Gemechu, 2013). Liquidity risk originates from the likelihood of an organization's being unable to tackle uncertainties resulting from changes in its cash inflows and outflows. Banks face the risk of loan defaults, which may make it difficult for them to raise funds to meet possible increases in demand for loans. A liquidity ratio is the sum of funds that a company may have at its disposal to meet its maturing obligations. Higher liquidity ratios are termed "healthy for the business" and firms with high debt levels and low liquidity are more likely to fail (Zhongming et al., 2019). The liquidity ratio expresses the degree to which a bank is capable of fulfilling its respective obligations. Banks make money by mobilizing short-term deposits at lower interest rates and lending or investing these funds in the long-term at higher rates, so it is hazardous for banks to mismatch their lending interest rates (Muluaalem, 2015). To measure liquidity, various scholars employed various ratios. For instance, Total Loans to Total Customer Deposit (Kristianti & Yovin, 2016; Ongore & Gemechu, 2013); and Liquid Assets to Total Deposit (Melaku & Melak, 2017). For the purpose of this study, the ratio of liquid assets to total deposits and total loans to total customer deposits will be the proxies of liquidity.

Asset quality (credit management) and its effect on performance

Credit or default risk is the primary source of bank failures. It relates to the quality of bank assets, or the risk that a borrower will default. A default occurs when a borrower does not make the required interest and principal payments in a timely manner.

Credit risk is a risk due to the failure of the debtor and/or other parties to meet obligations to banks (Syafi'I & Rusliati, 2016). Credit risk arises whenever a lender is exposed to a loss from a borrower, counterparty, or an obligatory who fails to honor their debt obligation as they have contracted. This loss may derive from deterioration in the counterparty's credit quality, which consequently leads to a loss on the value of the debt, or the borrower defaults when he is willingly fulfilling the obligations (Oluwafemi et al., 2014).

The quality of assets is an important parameter in gauging the strength of a bank. The logic behind calculating the asset quality is to determine the employment of assets in investment using net income as a fraction of the bank's total assets. One important objective of the financial sector reforms is to improve the quality of loan assets, which have been classified into performing and nonperforming assets. Assets that have low quality usually have a higher possibility of becoming non-performing loans. Non-performing loans are usually bad debts that are in default or are near default (Anteneh, 2018). For instance, according to different researchers, (Syafi'I&Rusliati, 2016; Garr, 2013) ratio of non-performing loans (NPL) is defined as the proxy of credit quality.

Operational quality and its effect on performance

Management efficiency is one of the key internal factors that determine the bank's profitability. It is represented by different financial ratios like total asset growth, loan growth rate, and earnings growth rate. Yet, it is one of the complexes subject to capture with financial ratios (Ongore & Gemechu, 2013). The quality of earnings is the ability of earnings to reflect the current operating performance of the company. Moreover, it reflects a good indicator of future operational performance and provides a good measure of the value of the company (seble, 2020).

Operational risk is a risk that is due to the non-functioning of internal processes, human error, system failure, or external problems affecting the operations of the bank (Syafi'I&Rusliati, 2016). Different scholars used different ratios of proxies of operational quality. For this study, total operating expense to operating income was a proxy for operational quality.

Asset compositions

Typically, assets are divided into two categories: tangible assets and intangible assets. Fixed assets and current assets make up the tangible assets. According to accounting standards, intangible assets have distinct conditions. Therefore, most of the assets presented on the balance sheet for the companies are tangible assets (fixed and current). In this context, an asset structure is a group of assets (tangible) held by the firm to establish and expand its business (Mawih K. Al Ani, 2014).

Asset composition consists of fixed assets, current assets, intangibles, and long-term investments. Firms use fixed assets to transform raw materials into finished goods. These assets are called property, plant, and equipment, which include land, buildings, machinery, equipment, automobiles, furniture, and fittings. Although fixed assets continue to gain prominence in firms, there is also a need to maintain sufficient current assets to enhance liquidity and satisfaction of short-term obligations. This mix requires a trade-off which probably affects profitability and investment. When the concentration of current assets is higher, it is believed their contribution is also higher in relation to asset turnover and vice versa. The importance of assets to the firm is significant. Firstly, firms cannot commence or embark on expansion without assets because they require assets for the production of goods or services. These assets measure the ability of the firms to survive and compete with other firms. The firms hold the assets because there is no effective rental market to sell or buy these assets. Some other firms hold assets (especially fixed assets) because of the tax advantages derived from economic growth and technological development (Umobong and Agburuga, 2019). For the purpose of this study, the researcher classified assets into fixed and current assets.

Fixed asset and its effect on performance

Profits can be generated by investing in fixed assets like land, buildings, plant and machinery, fixtures, fittings, and motor vehicles, which enhance the productive capacity of firms to ensure long term profitability. This category of assets does not change frequently, and they are purchased to produce and sell more. Assets have a significant role in determining the efficiency and profit ratio of a firm. Since a firm acquires plant and machinery and other productive fixed assets for the purpose of generating sales. He also determined whether or not a firm's investment in fixed assets was being used efficiently. A fixed asset turnover ratio indicates efficient utilization of fixed assets in generating sales, while a low ratio indicates inefficient management of fixed assets (Eyerusalem, 2019). For this study, the researcher used the proportion of fixed assets to total assets.

Current asset and its effect on performance

Profits can be generated by investing in fixed assets like land, buildings, plant and machinery, fixtures, fittings, and motor vehicles, which enhance the productive capacity of firms to ensure long-term profitability. This category of assets does not change frequently, and they are purchased to produce and sell more. Assets have a significant role in determining the efficiency and profit ratio of a firm. Since a firm acquires plant and machinery and other productive fixed assets for the purpose of generating sales. He also determined whether or not a firm's investment in fixed assets was being used efficiently. A fixed asset turnover ratio indicates efficient utilization of fixed assets in generating sales, while a low ratio indicates inefficient management of fixed assets (Eyerusalem, 2019). For this study, the researcher used the proportion of fixed assets to total assets as the measure.

2.5.2 Macroeconomic Variables/Factors

This is the risk of asset value change associated with systematic factors. Market risk, by its nature, can be hedged, but cannot be diversified away completely. Two market risks that are of concern to the banking sector are interest rates and the relative value of currencies.

The banking operation is solely dependent on these as they impact on performance (Oluwafemi et al, 2014).

Among the aforementioned, external variable interest rates and exchange rates have a direct impact on the financial performance of banks.

Interest rate risk

An interest rate is the price a borrower pays for the use of money they borrow from a lender or financial institution and is expressed as a percentage rate over a period of one year. At the same time, this price is the major income of the banking sector. High interest rates tend to discourage people from borrowing and opting to invest more, while low interest rates tend to encourage more loans to be acquired (Girum,). It measures how a particular risk exposure can cause a mess to the bank's profitability. It especially reflects the degree to which interest rate changes can affect earnings and hence the bank's capital (Seble, 2020). This is the cost of advancing or borrowing funds. Banks are required to have clearly defined policies and procedures for controlling interest rate risk. In the 1980s and 1990s, the "Gap Model" was commonly used by financial organizations to evaluate exposures to interest rate risk. Interest rate risk management consists of policies, actions, and techniques that a bank uses to minimize the risk of a reduction in its net equity due to adverse changes in interest rates. Interest rate risk factors have negative effects on a bank's earnings and its economic position that are estimated in each currency in which the bank has interest-rate-sensitive securities and off-balance sheet positions. Changes in interest rates reduce banks' earnings, and investors may lose potential return if interest rates rise above a particular rate. Profitability rises as interest rates rise due to a greater margin between the central bank's rate and the rates that are charged by a bank to its customers. Interest rate movements affect the financial performance of commercial banks. Some banks issue interest-bearing deposits so that their profits decrease when rates go up, resulting from an increase in the compensation to depositors. The interest rate exposure affects banks' cash flow and consequently affects their ability to lend if external funding is expensive. It is therefore imperative for commercial banks to manage the interest rate risks they face to enable them to achieve the desired profitability levels (Zhongming et al., 2019).

Interest rates affect all sectors of the economy through the cost of debt and the availability of money and credit, and this could affect a firm's ability to access external sources of funds. Fiscal policies affect a firm's after-tax net cash flow, its cost of capital, and potentially the demand for its products and survival. Prior to interest rate liberalization, interest rates were determined through administrative controls and after liberalization, by market forces (Augustine E. & Olusegun, 2019). For this study, the interest rate sensitivity gap (RSA to RSL) was the proxy of interest rate risk.

Exchange rate risk

Bergen (2010), cited by Lagat & M. Nyandema (2016), examined the factors that influence exchange rates and found that interest rates, inflation, and exchange rates are all highly correlated. By manipulating interest rates, central banks can exert influence over both inflation and exchange rates, and changing interest rates impacts both inflation and currency values.

Higher interest rates offer lenders in an economy a higher return relative to other countries. Therefore, higher interest rates attract foreign capital and cause the exchange rate to rise. The impact of higher interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. Lower interest rates tend to decrease exchange rates, whereas higher interest rates tend to increase exchange rates (Lagat & M. Nyandema, 2016). For this study, the average annual exchange rate (USD to ETB) was used as the proxy of exchange rate risk.

2.6 Empirical Studies

Under this section of the study, different studies that were conducted to examine ALM and the performance of banks have been presented. Most specifically, as long as the objective is limited only to bank-specific determinants, previous studies presented here have also focused on these determinants too.

Olusegun (2016) conducted research on the effects of assets and liability management on the financial performance of some selected Nigerian Banks by using a panel data regression analysis and taking ROE as a measure of performance. From this study, the author concluded that banks that fail to monitor their deposits tend to be less profitable than those that pay particular attention to asset quality. The results indicate that the effect of management strategy on performance indicates that any time the company decreases its asset value, the profit margin increases, which suggests that decreasing asset value increases profitability. Also, anytime the company increases its assets, its liability also increases as the profit margin reduces. This analysis explains the objective of the coordination between assets and liabilities and its effect on performance and profitability as a whole.

The study by Novickyte&Petraitytė (2013) was undertaken to assess the asset and liability management of Lithuanian banks by using panel data covering a period of 2000 up to 2013 and concluded that the banks should plan and forecast the different scenarios of their operational effectiveness as the higher risks involved might cause the higher losses.

In the study to determine the determinants of the financial performance of 37 Kenyan commercial banks, Ongore&Gemechu (2013) used panel data of ten years from 2001 to 2010 and a multiple linear regression model. In this study, ROA, ROE, and NIM were used as measures of performance and capital adequacy. efficiency in asset quality managementliquidity GDP and inflation were used as ALM parameters and found that asset quality, which is expressed as non-performing loans to total loans, is negatively related to all three bank performance indicators. This indicates that poor asset quality or high nonperforming loans to total assets is related to poor bank performance. The negative

correlation coefficient between poor asset quality and return on equity is very strong. This is due to the fact that loans constitute the largest share of assets that generate income for the investment (equity). The other explanatory variable, management efficiency, is positively related to all the three performance ratios and more strongly related to ROE. On the other hand, liquidity has no significant relationship with performance.

Tamiru (2013) undertook a study to determine the effect of ALM on Ethiopian commercial banks from 2005 to 2010 by using pooled OLS regression analysis and the SCA model. In his study, he found that negative and insignificant relations between profitability and the general rate of inflation exist either because bank management may not be able to well anticipate the future rate of inflation or it may have happened unexpectedly. This might be because bank management's ability to accurately predict inflation can positively affect the profitability of the bank, as the bank can adjust interest rates in the desired direction in order to increase profit, whereas failure to accurately predict inflation could raise costs due to imperfect adjustment of interest rates and thus adversely affect the bank's profit.

Zhongming et al. (2019) conducted a study to assess the impact of financial risk indicators on fifteen selected commercial banks in Ghana, covering the years 2007 to 2017 by using this Ordinary Least Square method. The study used liquidity risk, credit risk, foreign exchange risk, interest rate risk, capital management risk, bank size, and bank deposit as parameters and discovered that financial performance, as measured by returns on assets, has a significant correlation with credit risk, liquidity risk, foreign exchange rate risk, and interest rate risk.

Isaac (2015) used data for the 1997–2013 ordinary least square (OLS) method of multiple regression to examine the effect of exchange risk on Nigerian bank performance. The author examined the effects of interest rate, total assets, and inflation on performance in this study and discovered that exchange rate risk has a significant impact on bank performance, and a well-managed exchange rate is capable of driving immediate and improved performance of banks within the Nigerian economy. But the study again failed to identify the other aforementioned variables.

S. Issa, N. Hussein and S. Hussein (2015) conducted research to observe the effect of earning quality on the liquidity of Iraqi banks and found earning quality has a significant negative impact on liquidity.

According to Tesfaye (2014), liquidity has a positive but not significant effect on performance. The positive relationship seems to be an outcome of excess liquidity, which allows banks to diversify their income via engaging themselves in non-traditional banking services like foreign operations and investment. Furthermore, he concluded that credit risk, as measured by the provision-to-total-loan ratio, has a negative and significant impact on Ethiopian bank profitability. In addition, management efficiency proxies such as service change to gross income have a positive impact on profitability and concluded that in the Ethiopian situation, however, non-interest-bearing assets like foreign deposits and investments in bills remained big contributors to the profitability of banks. Non-interest expense to total expense was found to have a negative relationship with profitability in the study made to investigate determinant factors of Ethiopian banks covering a period of 1990–2012 by using the CAMEL approach and multiple linear regression analysis. The study also included macro-economic variables but failed to include interest rates and exchange rates.

In the study by Oluwafemi Israel et al. (2014), they examined the risk management and financial performance of 10 Nigerian banks between 2006 and 2009 and found that the cost of bad and doubtful loans and liquidity were negatively related to the performance of Nigerian banks by 5%. Non-performing loans, on the other hand, have a positive relationship with performance as measured by both ROA and ROE. Abidemi, Ganiyu, and Bamidele M. (2018) concluded that the inflation rate and interest rate have a negative and significant effect on profitability at 5% and 10% confidence levels, respectively, even though the study covers 114 Nigerian non-financial firms.

According to Syafi'I and Rusliati (2016), market risk, as represented by interest rates, has a positive and significant effect on profitability. This is because one of the bank's revenue streams is derived from the difference between customer interest rates and the bank's own interest rates, and an increase in interest rates could generate more profit for banks. Other

parameters such as operational efficiency, denoted by operational expense to operational income, and liquidity, denoted by loan to deposit ratio, have a positive and significant effect on profitability. However, credit risk measured by non-performing loans has a negative but insignificant effect on the profitability of Indonesian banks listed on the Indonesian stock exchange from the period 2010-2014 by using a multiple regression model.

Melaku (2016) studied the determinants of bank profitability in Ethiopia and found that inefficient liquidity is the main cause of the failure of the bank because liquidity has a positive and significant effect on profitability. Furthermore, credit risk, as measured by the ratio of provision for loan loss to total loan, has a significant negative impact on the profitability of six private Ethiopian banks as measured by ROA. He also included macro-economic variables but failed to include the exchange rate and interest rate.

Melaku&Melaku A. (2017) conducted a study to investigate the determinants of six Ethiopian private profitability for the period of 2004 to 2011 using fixed effects estimation analysis and a Classical Linear Regression Model. In the study, the CAMEL rating approach was used, and they concluded that liquidity and credit risk, measured by provision for loss to total loan, have a positive and significant effect on profitability at 5% and 1% confidence levels, respectively. In addition, macro-economic factors such as GDP and inflation rate have no significant effect on an Ethiopian bank's profitability. But the study failed to incorporate other macro-economic factors such as interest rates and exchange rates.

According to Skripsi (2019), liquidity as measured by total loan to total deposit has a positive and insignificant effect on profitability as measured by ROA and ROE, whereas credit risk as measured by NIL has a negative significant effect on profitability. GDP and inflation have a negative and insignificant effect on the profitability of Indonesian banks covering 2015–2017. In this study, multiple regression analysis was used.

Anteneh (2018) concluded that asset quality and management efficiency have a negative significant effect on performance. According to a study conducted to analyze the financial performance of 11 Ethiopian banks using the CAMEL Approach and Fixed Effect Regression Analysis from 2011 to 2016, liquidity has a positive effect while earning quality has a

negative and insignificant effect on the performance of Ethiopian banks. He stated that asset quality and management efficiency were the major significant variables that affected the performance of commercial banks. To the contrary, liquidity has a significant positive effect on performance, whereas earnings quality does not have a significant impact on profitability measured by both return on assets and return on equity.

Bulti (2019) examined the financial performance of Ethiopian banks for the period of 2010–2017 by using the CAMELS approach and OLS model. In this study, the author indicated that liquidity has a positive and significant effect, and management efficiency has a negative effect on both ROA and ROE. Asset quality is negative but significant only to ROE, whereas earning ability is positive but significant only to ROA. The same can be said for management efficiency, which has a negative significant relationship with both performance measures. Cheruiyot (2016) concluded that asset quality, management efficiency, and liquidity are strong determinants of financial performance.

Dawit (2016) undertook research to assess the determinant factors of the financial performance of Ethiopian commercial banks by taking ROA, ROE, and NIM as performance indicators. In the study, he explained that asset quality and earning ability have a negative and significant effect on both ROA and ROE. However, liquidity and macroeconomic variables, such as the foreign exchange rate, have a negative relationship with ROA and ROE, but significant only to ROE.

According to Gadzo, Kportorgbi, & Gatsi (2019), asset quality, as measured by non-performing loans divided by total loans, bank capital and reserves divided by total assets, and operational efficiency, as measured by reserve divided by shareholders equity, has a significant negative impact on performance. However, liquid funds/total interest-bearing liabilities as a proxy of liquidity have a positive significant effect on performance.

Martha (2014) conducted research on the effect of asset liability management on the performance of 43 Kenyan banks operated by the Central Bank of Kenya by using the CAMEL approach from the period 2010 to 2014 and found that asset quality, liquidity, and operational efficiency have a negative relationship with ROE as a measurement.

Muriith et al. (2016) stated that credit risk has a negative and significant effect on the performance of Kenyan commercial banks.

Mulualem (2015) conducted an investigation into the financial performance of 14 Ethiopian banks for 2010–2014 using the CAMEL approach and found that earning quality and liquidity have a positive and significant effect on performance at 1% and 5% confidence intervals, respectively. On the other hand, management efficiency affects performance negatively at 1%, whereas, asset quality has a negative but insignificant effect even at 10%.

Elhussein& Osman (2019) determined that the fluctuation of the foreign exchange rate has a negative and insignificant effect on the profitability measured by ROE and ROA of Sudanese banks by taking a total of 37 working banks in Sudan and covering the period 2002–2017.

From the research done to assess the financial performance, Ermiyas (2016) stated that asset quality, management efficiency, and liquidity were negatively related to performance, but liquidity was insignificant to the performance of six Ethiopian banks from 2000 through 2014. Wondwesen (2018) stated in his study to assess the determinants of the performance of Ethiopian banks that liquidity identified by loan-to-deposit ratio and interest rate has a positive and significant effect on ROA. Further, the foreign exchange rate has a positive but insignificant impact on performance.

Kristianti&Yovin (2016) used the study to explore factors that affect the performance of both government and private banks and concluded that operational efficiency and NPL negatively affect government banks, whereas private banks are affected by operational efficiency but not by NPL.

Lagat&Nyandema (2016) explored the effect of foreign exchange rate fluctuations on the financial performance of commercial banks listed on the Nairobi security exchange between 2006 and 2013. As the regression result shows, the foreign exchange rate has a

positive and significant effect on performance. Moreover, interest rates have a positive and significant effect on ROA, ROA and EPS as measurements of performance.

Saleh&Afifa (2020) concluded that liquidity has a significant negative effect on ROA and ROE, whereas credit risk has a significant negative effect on ROE but is insignificant on ROA.

In the study conducted to assess the effect of foreign exchange rate risk on Nigerian banks, Isaac (2015) concluded that interest rates have a negative and significant relationship with the exchange rate, while the latter has a positive and significant relationship with the performance of Nigerians. To the contrary, Augustine, E. &Olusegun (2019), and Tee (2017) found that interest rates are positive and significant. According to Augustine, E., and Olusegun (2019), the interest rate has a positive and significant effect on the performance of Nigerian multinational corporations, while the exchange rate has a positive but insignificant effect.

Girum (2020) indicated that the foreign exchange rate described by the annual exchange rate of USD to ETB found that it had a negative significant effect. The interest rate in this study was described by the difference between lending and deposit rates and found to have a negative but insignificant effect on performance by the study undertaken to analyze the effect of the foreign exchange rate on the performance of six Ethiopian private commercial banks from 2000 through 2018. The study used a random effect regression model. In another study, Tadesse (n.d), inferred that the exchange rate has a negative effect on performance.

Razman B. Anuar et al. (2021) undertook a study to assess the effect of non-current assets on the performance of firms in the Malaysian construction sector by taking fixed asset turn over, total asset turnover, and asset tangibility as explanatory variables and ROA and ROE as proxies of performance, and have found that both fixed asset turn over and total asset turnover have a significant and positive impact on both performance indicators.

Umobong&Agburuga (2019) concluded that plant property and equipment, long term investment, intangible assets, and current assets have positive and significant relationships with ROA. Long-term investment, intangible assets, and current assets all have positive and significant relationships with ROE. However, plant property and equipment have negative and significant relationships with ROE. The study was to examine the relationship between asset composition and the performance of firms in Nigeria. The study classified assets into plant property and equipment, long-term investments, intangible assets, and current assets and measured performance by ROA and ROE. In the study, insurance, banking, and manufacturing firms quoted on the Nigeria Stock Exchange were incorporated and used cross-sectional secondary data from 2013 to 2017.

Gladys Mwaniki& Job Omagwa (2017) also used property, plants and equipment, current assets, intangible assets, and long-term investments and funds as independent variables to assess the relationship between asset structure and financial performance of Kenyan commercial and service firms mentioned in the Nairobi security exchange of five-year panel data from 2010 to 2014 and found that property, plants and equipment, and long-term investments and funds have a positive and significant effect on performance, while current assets and intangible assets were negatively related to performance for both performance measures. The study utilized multiple regression models.

2.7 Summary of Literature Review and Research Gap

This study was conducted to assess the effect of asset liability management on the financial performance of Ethiopian private commercial banks. The mentioned literature and previous studies show that ALM has a direct impact on financial performance. Since asset and liability management is attributable to financial success, banks have to monitor their assets and liabilities adequately. There are studies based on the effects of asset liability management and financial performance. However, most of the studies conducted in Ethiopia follow the CAMEL approach. For instance, considering the studies conducted on asset quality, Ongore and Gemechu (2013); Gadzo, Kportorgbi&Gatsi (2019); Muriithi et al. (2016) stated that asset quality has a negative and significant effect on performance. On the contrary, Melaku&Melaku, A. (2017) concluded credit risk, which is measured by the

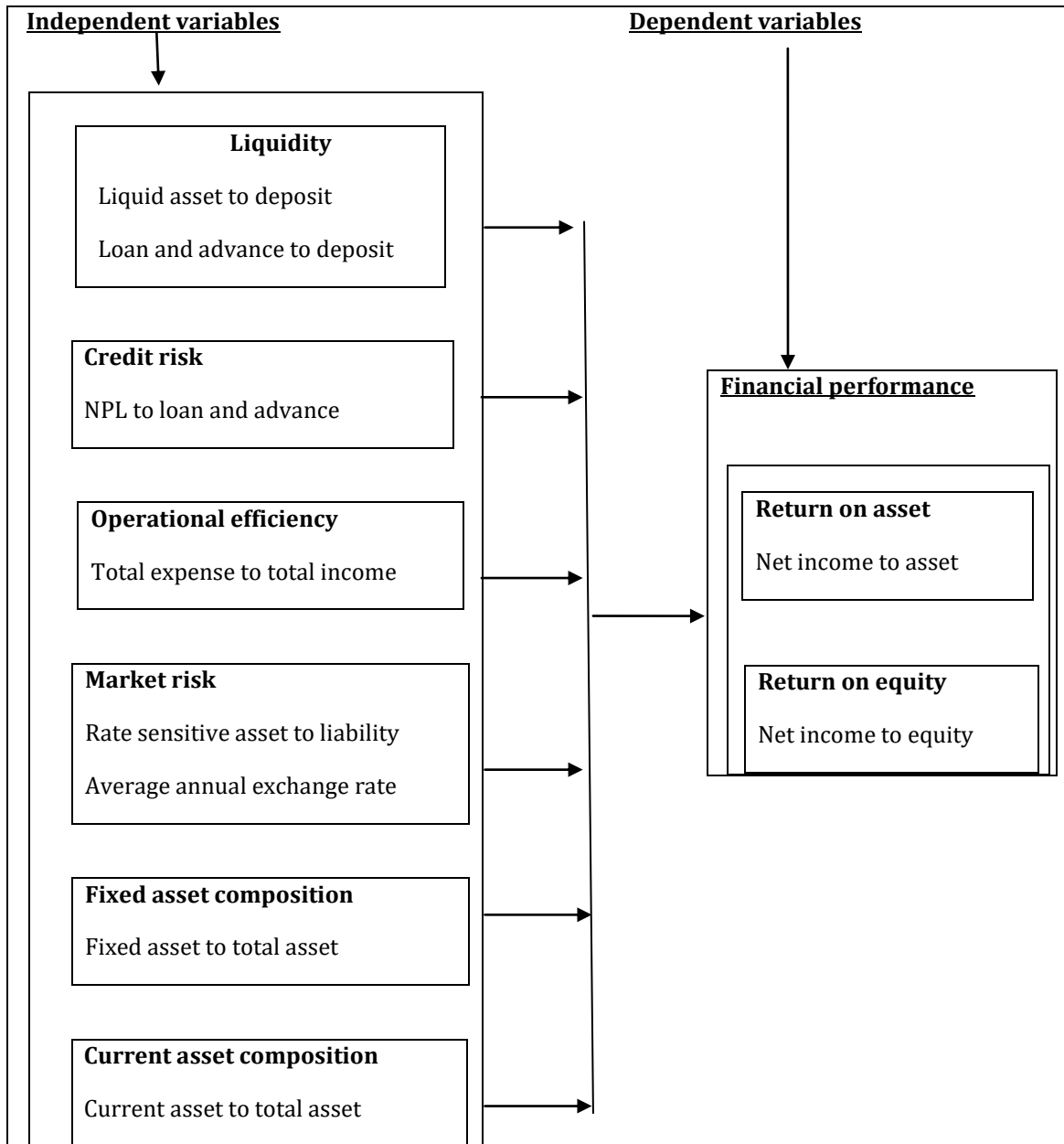
same approach, has a positive significant effect on performance and found that asset quality has whereas (Bulti, 2019; Mulualem, 2015) concluded asset quality has a negative and insignificant impact. On the other hand, variable asset composition, Umobong and Agburuga (2019) and Gladys Mwaniki and Job Omagwa (2017) found that long-term investment has a positive and significant relation to ROA and ROE. However, Umobong and Agburuga (2019) found that plant property and equipment have a negative and significant relationship only with ROE and intangible assets, while current assets have a positive and significant relationship with ROA and ROE. In contrast, Gladys Mwaniki and Job Omagwa (2017) revealed that plant property and equipment have positive while intangible assets and current assets have negative and significant relationships with ROA and ROE.

Razman B. Anuar, Mohamad B. Jais, and Michael Tinggi (2021), undertook a study to assess the effect of non-current assets on the performance of firms in the Malaysian construction sector by taking fixed asset turn over, total asset turnover, and asset tangibility as explanatory variables, and found fixed asset turn over and total asset turnover have a positive impact on ROA and ROE. Again, another parameter, exchange rate, (Isaac, 2015; Girum, 2020; and Lagat& M. Nyandema, 2016) stated that the foreign exchange rate has a significant impact on performance, while (Elhussein& Osman, 2019; and Augustine, E. &Olusegun, 2019) concluded it has no significance for performance. Considering the above empirical studies, as far as the researchers' knowledge is concerned, no study has been conducted on the effect of asset liability management on performance by taking market risk variables such as interest rate and exchange rate into account. In addition to this, no research in Ethiopia has been conducted on the effect of asset liability management on performance by taking asset composition into account.

Given the above contradicting results of previous studies, most studies conducted in Ethiopia focused on the CAMEL approach or relationship between ALM and performance, using ROA and or ROE as a measure of performance. To the researchers' knowledge, no study was conducted on the effect of asset liability management on the financial performance of Ethiopian commercial banks by taking banking-specific performance determinants. Apart from bank specific determinants such as credit quality, liquidity,

market risk, and operational efficiency (seblewengel, 2018; Syafi'I&Rusliati, 2016; and Zhongming et al., 2019), the researcher is believed to incorporate the effect of asset composition since the subject matter is asset and liability management. Currently, Ethiopian banks have a package of diaspora accounts to collect foreign currency deposits and retention accounts credited from export proceeds, which are credited only in foreign currency. In addition to this, banks have been providing loans for those Diasporas to be collected in foreign currency. Most banks, as a nature, have also been engaged in cross-border trade to be effected and collected with foreign currency. All of this is prone to exchange rate fluctuations. Taking this and other events into consideration, the foreign exchange rate may have an impact on assets and liabilities, and thus on performance, and it must be addressed. Previous studies, in particular, did not include interest rates and foreign exchange rates as dependent variables. The specific aim of this paper is, therefore, to find out the effect of credit quality, liquidity, foreign exchange rate, interest rate, and operational quality, and additionally asset composition on the performance of Ethiopian private banks by taking ROA and ROE as performance indicators.

2.8 Conceptual Structure



Chapter Three

Research Methodology

This chapter included a method which would be adopted throughout the study to achieve the research objective. These include: research approach, research design, study population and sample, variable summary, data source and collection method, and data analysis.

3.1 Research Design

It provides a framework or plan of action for the research as it constitutes the blueprint for the collection, measurement, and analysis of data. Explanatory research design is a research method used to describe the dependent and explanatory variables and make an analysis between them. The objective of this study tends to explain the relationship between asset liability management and financial performance. The explanatory type of research design helps to identify and evaluate the causal relationships between the different variables under consideration. If the objective is to determine which variable might be causing a certain behavior, i.e., whether there is a cause and effect relationship between variables, explanatory research must be undertaken (Shields, 2013). Therefore, to achieve this objective, an explanatory research design was employed in the study. As long as the objective of this study is to clarify the effect of core banking business performance determinants on performance, an explanatory research design was adopted. In explanatory research, the researcher has to use facts or information already available and analyze them to make a critical evaluation of the material.

3.2 Research Approach

The research approach is the general framework for the study that links knowledge claims, strategies of enquiry and specific methods. The research approach implicitly reflects the researcher's attitude as to how knowledge is constructed and also commands what method to be employed in the study. According to Creswell (2009), quantitative research helps to test objective theories by analyzing the relationship between explanatory variables and

dependent variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. Quantitative research is addressed by adequately understanding the influence of variables on outcome. Accordingly, it is more appropriate to use a quantitative research approach for the purpose of this study.

3.3 Target Population, Sampling Technique and Sample Size

In this study, the target population would be all private commercial banks registered on NBE and under operation. Hence, there are 16 private commercial banks. The researcher used a census sampling technique for this study and included all private banks because they are few in number. The study deliberately excluded commercial bank of Ethiopia this is because commercial bank Ethiopia has huge gap from private banks. For instance consider total loan to deposit is has large gap from average private banks ratio. The reason why this bank excluded from the research was to not produce misleading output from the overall ratio.

Based on this technique, all banks were selected. Accordingly, AB, CBO, DB, DGB, BuiB, BriB, AIB, AdiB, BOA, EB, HB, LIB, NIB, WB, OIB, and ZB were the target populations of the study.

3.4 Data Source and Collection Method

This study relied solely on secondary sources for its data. The secondary data inputs are published financial statements of each sample banks, which will be collected from NBE and each sample bank's websites. The study incorporated target bank data covering a period of 7 years from 2014 through 2020. The reason why the study used 2014 as a benchmark is that, even though the latest established bank, which was Enat bank in 2013, fully compiled and organized data for the newly established banks was found starting from 2014.

3.5 Variable Summary

3.5.1 Dependent Variables

The dependent variables in this study were the financial performance of banks as measured by ROE and ROA. ROE is a measure of the ability of the banks to generate income by using stockholder equity. It was measured by dividing net income after tax by total equity. ROA is a measure of the ability of the bank's management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the company's resources are used to generate income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution. It is measured by dividing net income after tax by the total assets of the bank. Return on assets and return on equity are measures of performance (Sufian & Habibullah, 2009; Naceur & Omran, 2011). Here, the research used ROA and ROE as performance indicators because the researcher believed that these two performance indicators were enough to measure the performance, for this study.

3.5.2 Independent variables

The independent parameters that were going to be employed in this study were asset composition, credit quality, liquidity, interest rate, exchange rate, and operational efficiency.

Credit (asset) quality

Loans and advances are the major assets of commercial banks from which they generate income. Unless banks maintain appropriate loan management, these major profitable assets of the bank will be the cause of credit risk. The quality of the loan portfolio determines the profitability of banks. Loan portfolio quality has a direct bearing on bank profitability. Thus, nonperforming loan ratios are the best proxies for asset quality, (Ongore&Gemechu, 2013). For the purpose of this study, the ratio of total NPL to total loan and advance was used.

Liquidity

Liquidity is a measure or an indicator of the bank's ability to meet its commitment demanded by depositors. Liquidity risk originates from the likelihood of an organization's being unable to tackle uncertainties resulting from changes in its cash inflows and outflows. Banks face the risk of loan defaults, which may make it difficult for them to raise funds to meet possible increases in demand for loans. It is also an indicator of how much of the firms' deposit is tied up with loan and advance. Total loan and advance to total deposit and total liquid asset to total deposit would be used as proxies for liquidity in this study.

Asset composition

Asset composition consists of fixed assets, current assets, intangibles, and long-term investments. Firms use fixed assets to transform raw materials into finished goods. These assets are called property, plant, and equipment, which include land, buildings, machinery, equipment, automobiles, furniture, and fittings. Although fixed assets continue to gain prominence in firms, there is also a need to maintain sufficient current assets to enhance liquidity and satisfaction of short-term obligations. This mix requires a trade-off which probably affects profitability and investment. When there is a higher concentration of current assets, it is believed their contribution is also higher in relation to asset turnover and vice versa (Umobong and Agburuga, 2019). As it was said from the very beginning, this study's data source was the financial statement of each bank which was collected from national bank of Ethiopia. In this data the each asset category was not identified and valued separately. For this reason, the study categorized asset compositions in to only current asset composition and fixed asset composition.

Fixed assets and its effect on performance

Profits can be generated by investing in fixed assets like land, buildings, plant and machinery, fixtures, fittings, and motor vehicles, which enhance the productive capacity of firms to ensure long-term profitability. Fixed asset turnover ratio to evaluate utilization of fixed assets investment and he also identified which firm is utilizing its investment in fixed assets efficiently or not (Eyerusalem, 2019). High fixed asset turnover ratio indicates

efficient utilization of fixed assets in generating sales, while a low ratio indicates inefficient management of fixed assets. For this study, the researcher used the proportion of fixed assets to total assets as the measure.

Current assets and its effect on performance.

Current assets are assets that can be sold or used within a reporting period. These types of assets are important to businesses to fund their day-to-day activities. Current assets include cash, cash equivalent, investments in marketable securities such as Treasury bills and bonds, receivables, inventories, and prepaid. In particular, for banks, current assets are crucial to paying their obligations to their customers and covering operational expenses. For this study, current assets will be measured by the proportion of current assets to total assets. Due to the data which this paper is based on did not separate loans in their tenure, the researcher have taken all assets except fixed asset as current asset.

Operational efficiency

Operational efficiency is a primary metric that measures the efficiency of profit earned as a function of operating costs. Operation expenses are inevitable in any organization and, indeed, in life itself. However, they become a threat when there are weaknesses in internal controls. Operational efficiency indicates whether a bank uses all factors of production optimally or efficiently. Thus, the efficiency of a bank's operations will greatly affect the performance of the bank (Kristianti&Yovin, 2016). This indicates how the firm records operational income beyond its expenses. In addition, operational efficiency is the ratio between the output gained from the business and the inputs necessary to run a business operation. Thus, for this study, total operating expense to gross operating income is a proxy for operational quality. The ratio indicates how the firm's operational expenses compare to operational income. The higher the ratio indicates the firm has lower operational income due to having incurred more operational costs and recording weak operational performance and vice versa.

Interest rate

An interest rate is the price a borrower pays for the use of money they borrow from a lender or financial institution and is expressed as a percentage rate over a period of one year. At the same time, this price is the major source of income for the banking sector. High interest rates tend to discourage people from borrowing and opting to invest more, while low interest rates tend to encourage more loans to be acquired (Girum, 2020). It measures how a particular risk exposure can cause a mess for the bank's profitability. It especially reflects the degree to which interest rate changes can affect earnings and hence the bank's capital (Seble, 2020). This is the cost of advancing or borrowing funds. Banks are required to have a clearly defined plan. In the 1980s and 1990s, financial institutions used the "Gap Model" to assess their exposure to interest rate risk. Interest rate risk management consists of policies, actions, and techniques that a bank uses to minimize the risk of a reduction in its net equity due to adverse changes in interest rates. Interest rate risk factors have negative effects on a bank's earnings and its economic position that are estimated in each currency in which the bank has interest-rate-sensitive securities and off-balance sheet positions. Changes in interest rates reduce banks' earnings, so investors may lose potential return if interest rates rise above a particular rate (Zhongming et al., 2019). For this study, the interest rate sensitive gap (rate sensitive asset to rate sensitive liability) was the proxy for this variable. The rate-sensitive assets in this study were loans and advanced investments, while deposits were considered as rate sensitive liabilities.

Exchange rate exposure

Exchange rate risk is defined as the variability of a firm's value due to uncertain changes in the rate of exchange. Exposure refers to the degree to which a company is affected by exchange rate changes. Foreign exchange risk arises due to the fluctuations in the exchange rates. Commercial banks' performance is affected by exchange rates because of their funding and get back in the form of dollars or foreign currency, so the income received is also dependent on the fluctuation of exchange rates. Therefore, the risk of exchange rate plays an important part in the company's profit generated. For this study, the average annual exchange rate was the proxy for the exchange rate.

Table 3.1 Summary of study variables' measurement and definition

	Variable	Measurement	Definition
Dependent	ROA	Net income after tax/ total asset	The ability of the firm to generate income from its asset
	ROE	Net income after tax/ total shareholder equity	The ability of the firm to generate income from its shareholder equity
Liquidity	TLADTD	Total loan and advance/ total deposit	It shows how much the banks deposit is provided as loan and advance
	LATD	Liquid asset/ total deposit	It shows the ability to meet its obligation
Credit quality	NPLLAD	Non-performing loan/ total loan and advance	It indicates the proportion of default loan to total loan
Operational quality	OEOI	Operational expense/ operating income	Show how efficient the company's management in keeping operating costs below operating income.
Asset composition	CA	Current asset/ total asset	Shows how much of the given banks' asset has been tied up with current asset and its impact on performance.
	FA	Fixed asset/ total asset	Shows how much of the given banks' asset has been tied up with fixed asset and its impact on performance.
Interest rate	RSA/RSL	Rate sensitive asset/ rate sensitive liability	The proportion of interest rate risk prone asset to interest rate risk prone liability.
Exchange rate	FEXRT	Average annual exchange rate	Average annual exchange rate

3.6 Model Specification

If there is more than one independent variable, the model appropriate to test the significance of these variables to explain the change in the dependent variable would be a multiple regression model. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and the mathematical expression of quantitative relationships (Brooks, 2008). In order to employ the appropriate estimation, a Hausman test was used to select either a fixed-effect or random-effect model

According to Brooks, (2008), the general multivariate regression model with K independent variables can be written as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \epsilon_i \quad (i = 1, 2, 3, \dots, n)$$

Where Y_i is the i^{th} observation of the dependent variable, X_{1i}, \dots, X_{ki} are the i^{th} observation of the independent variables, β_0, \dots, β_k are the regression coefficients, ϵ_i is the i^{th} observation of the stochastic error term, and n is the number of observations. Accordingly the model for this study was re written as;

$$\pi_{it} = \beta_0 + \beta_1 CA_{it} + \beta_2 FA_{it} + \beta_3 TLATD_{it} + \beta_4 LATD_{it} + \beta_5 NPLLAD_{it} + \beta_6 OEOL_{it} + \beta_7 RSAL_{it} + \beta_8 FEXRT_{it} + \mu_{it}$$

Where;

π_{it} = is performance of bank i at a time t expressed by ROA and ROE

ROA = is Return on Asset (a measure of performance) measured by net profit before tax to total asset

ROE= is Return on Equity (a measure of performance) measured by net profit before tax to total shareholder equity

β_0 = intercept

$\beta_1, 2 \dots 8$ coefficients of parameter

CA = is current asset composition of bank i at t time

FA= is fixed asset composition of bank i at t time

TLATD = is total loan and advance to total deposit of bank i at t time

LATD= is liquid asset to total deposit of bank i at t time

NPLLAD= is non-performing loan to loan and advance of bank i at t time

RSAL = rate sensitive asset to liability of bank i at t time

FEXRT = exchange rate of bank i at t time

OEOI = is operational efficiency of bank i at t time
 μ_{it} = Error term where i is cross sectional and t time identifier

3.7 Data Analysis Technique

To comply with the objective, the paper is primarily based on panel data, collected from secondary data. As noted in Baltagi (2005), the advantage of using panel data is that it controls for individual heterogeneity, has less collinearity among variables and tracks trends in the data, something which simple time series and cross-sectional data cannot provide. Thus, collected panel data was analyzed by using descriptive statistics, correlations, regression analysis, and inferential statistics. Mean values and standard deviations are used for the analysis. The data from 2014 to 2020 for all private banks in Ethiopia (16 banks) was collected and a correlation matrix was conducted to examine the relationship between the dependent variable and explanatory variables. A regression model and t-statistic were used to determine the relative importance of each independent variable in influencing financial performance, and the study conducted regression analysis by using STATA 14.2 econometric software package, to test the casual relationship between asset liability management and profitability and to determine the most significant and influential explanatory variables affecting the performance of Ethiopian banks. Diagnostic tests of CLRM assumptions, including multicollinearity, heteroskedasticity, autocorrelation, and normality tests, have been conducted to ensure the safe application of multiple linear regression models. In addition, a Hausman test was used to select either a fixed-effect or random-effect model. After all the necessary data was collected, STATA 14.2 software was employed for data processing.

Chapter Four

Presentation and Result Discussion

4.1 Introduction

Under this chapter, the analysis of the panel data covering 7 years from 2014 to 2020 has been presented. Independent variables such as fixed asset composition, current asset composition, non-performing loan to total outstanding loan, liquid asset to total deposit, loan and advance to total deposit, interest rate risk, and foreign exchange rate risk are interpreted with respect to performance measured by ROA and ROE. Moreover, in this section, the statistics summary of variables, classical linear regression model selection and test, results of regression analysis, and a summary of final findings have been presented.

4.2 Descriptive Statistics of Variables

Under these section results of descriptive statistics of variables and diagnostic test has been provided here under.

4.2.1 Summary Statistics of Variables

Table 4.1 below indicates the summarization of dependent variables, which are ROA and ROE, and independent variables, fixed asset composition, current asset composition, non-performing loan to total outstanding loan, liquid asset to total deposit, loan and advance to total deposit, interest rate risk, and foreign exchange rate risk, mean standard deviation and minimum and maximum statistical values of population bank from 2014 to 2020.

Table 4.1: Descriptive statistics of variables

Variables	Number of observation	Mean	Standard deviation	Min	Max
ROA	112	2.87	0.76	0.35	5.13
ROE	112	19.79	5.73	2.97	41.09
FA	112	2.93	1.57	0.89	7.23
CA	112	97.06	1.57	92.77	99.1
TLATD	112	66.39	8.7	39.36	91.46
LATD	112	27.89	10.06	11.86	61.91
NPLLAD	112	1.67	1.10	0	8.83
OEOI	112	68.29	7.83	45.93	96.57
RSAL	112	93.12	8.55	60.92	110.33
FEXRT	112	25.36	5.14	19.65	35.09

Source: Author's computation on Stata output

Return on asset: As table 4.1 shows, the average profitability of Ethiopian private banks measured by ROA was 2.8%, varying from a minimum of 0.35% to a maximum of 5.13%. As it was indicated in chapter three, ROA was calculated as net income to total assets, and the result of 2.8% indicates 0.028 cents generated from every 1 birr of asset during the research period. The standard deviation of ROA (the variation from the mean point of profitability) was 0.76%.

Return on equity: as table 4.1 also shows, the average profitability of Ethiopian private banks measured by ROE was 19.8%, varying from a minimum of 2.97% to a maximum of 41.09%. As it was indicated in chapter three, ROE was calculated as net income to shareholder equity and the result of 19.8% indicates 0.198 cents generated from every 1 birr of equity during the research period. The standard deviation of ROE (the variation from the mean point profitability) was 5.3%.

Asset composition: one of the independent variables on which this paper was based is asset composition, which refers to the ratio of each firm's owned assets (into current and fixed) to total assets and its contribution to profitability, which is grouped into current asset

composition and fixed asset composition. From the table, the result of fixed asset composition indicated that on average, Ethiopian private banks' 2.9% of the assets were tied up with fixed assets, ranging from zero to a maximum of 7.2%. Specifically, the highest fixed asset ratio was recorded in the year 2020 by BOA. The value of fixed asset composition varied from the average ratio by 1.5%. The other composition proxy was current asset composition, which shows the ratio of assets that were held as current assets during the research period. The output showed that, on average, banks maintained 97.1% of their assets on current assets with a gap of a minimum of 92.8 to 100%. The standard deviation of both current and fixed assets was 1.6%, which shows Ethiopian private banks maintained their assets at almost the same mix ratio of current and fixed assets.

Liquidity: Liquidity is an indicator that as to the bank able to meet its commitment demanded by depositors. For this paper, liquidity was denoted by two indicators, total loan and advances to total deposit, which infers how the banks convert customer deposits into loans and advances, and secondly, total liquid asset to total deposit, which indicated how the banks were ready by holding cash and equivalent to meet depositors' obligations. As it is well known, the primary objective of financial institutions, especially banks, is to act as a bridge between surplus and shortage of finance. Banks collect deposits and lend to those in need. Accordingly, as the above table shows, Ethiopian banks converted 66.4% of their customers' deposits into loans and advances, ranging from 39.4% to a maximum of 91.5%. For this liquidity indicator, the standard deviation was 8.7%. On the other hand, liquidity measured by liquid asset to total deposit indicates how the banks were ready to meet their customers' unexpected needs for their money by holding more liquid assets. The value of average liquidity in this regard shows banks have secured 27.9% of collected deposit liquid with a standard deviation of 10.1%, which was greater than other variable deviations in this study. Both liquidity indicators were found in order with the national bank directive of SBB/57/2014, which forced financial institutions to keep at least 15% of their deposits liquid.

Credit (asset) quality: Credit or default risk is the primary source of bank failures. It relates to the quality of bank assets, or the risk that a borrower will default. A default occurs when

a borrower does not make the obligated interest and principal payments in a timely manner (Syafi'I & Rusliati, 2016). In order to measure the credit risk of private banks in Ethiopia, the research used non-performing loans to total outstanding loans and advances, and the statistical value showed that on average 1.7% of the loans and advances they granted came into default during the period, with a range of 8.8% to a minimum of zero. The deviation value for asset quality from the mean value indicated 1.1%, which indicated almost all banks had the same credit management status.

Operational Quality: Operational quality indicates the ability of the management to run the business to generate positive output. The mean value of operational quality showed 68.3%, calculated by dividing total expense by gross operating income, with a range of 45.9 to 96.6%. The result indicated that on average more than half (68.3%) of their total earning banks incurred operational costs in the same period with 1.1% variation.

Interest rate risk: Changes in interest rates reduce banks' earnings where investors may lose potential return if interest rates rise above a particular interest rate (Zhongming et al., 2019). As the above table depicted, the statistical value of interest rate risk, measured by rate sensitive asset to rate sensitive liability, was 93.1%, with a range of 60.9 to 110.3% and a variation of 8.6%. For this study, rate-sensitive assets are bank deposits, investments, loans and advances. These assets are vulnerable to interest rate changes. The rate sensitive liabilities were customer deposits.

Foreign exchange rate risk: The other macro-economic factor that affects banks performance was exchange rate. It is a risk that the banks suffer due to exchange rate fluctuations. The average value of the exchange rate shows 25.4 birr for 1 USD with a minimum of 19.6 to 35.1. This result shows that the Ethiopian birr has been depreciated by around 79% during just these 7 research periods. This shows how the bank's performance could be affected by the foreign exchange rate.

4.3 Diagnostic Test

Under this section test of CLRM assumption presented. These assumptions were that the average value of the errors is zero, homoscedasticity, autocorrelation, normality tests, and

multicollinearity tests. Brook (2008) stated that if the above five CLRM assumptions were met, problems such as incorrect coefficient estimation, incorrect standard error, and statistical test inappropriateness could arise. Before the regression analysis has been conducted, the assumptions have been tested here under.

4.3.1 Assumption of average value of the errors is zero ($E(u_t) = 0$)

Brook (2008) stated that if a constant term is included in the regression equation, this assumption will never be violated. Hence, this assumption is not violated since constant term included in the model.

4.3.2 Assumption of homoscedasticity ($\text{var}(u_t) = \sigma^2 < \infty$)

This assumption indicates that the variance for the error term should be equal for all observations. If the errors do not have a constant variance, they are said to be heteroscedastic, and in this way, the assumption of homoscedasticity is violated. For this research, a white test was performed to determine the presence of heteroscedastic, and it was discovered that there was the presence of heteroscedastic problem in the model. Even though homoscedasticity doesn't matter in panel data, the researcher used the Generalized Least Square estimation method to solve the homoskedasticity problem and get unbiased results.

4.3.3 Assumption of autocorrelation ($\text{cov}(u_i, u_j) = 0$ for $i \neq j$)

The other Brook's (2008) thought about CLRM says that the CLRM's disturbance term is that the covariance between the error terms over time (or cross-sectional, 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." In order to be sure whether there is or not perfect autocorrelation, the Breuch-Godfrey LM test was utilized. Despite the fact that the correlation matrix demonstrates the absence of an autocorrelation problem, the Breuch-Godfrey LM test indicates that the ROE model has an autocorrelation problem. Hence, in order to solve this problem, the dependent variables of ROE were transformed to log form and provided the following results:

Table 4.4: Breusch-Godfrey LM test for autocorrelation

Models	Lags(p)	chi ²	Df	Prob> chi ²
ROA	1	0.178	1	0.931
ROE	1	0.257	1	0.6120

H₀: no serial correlation

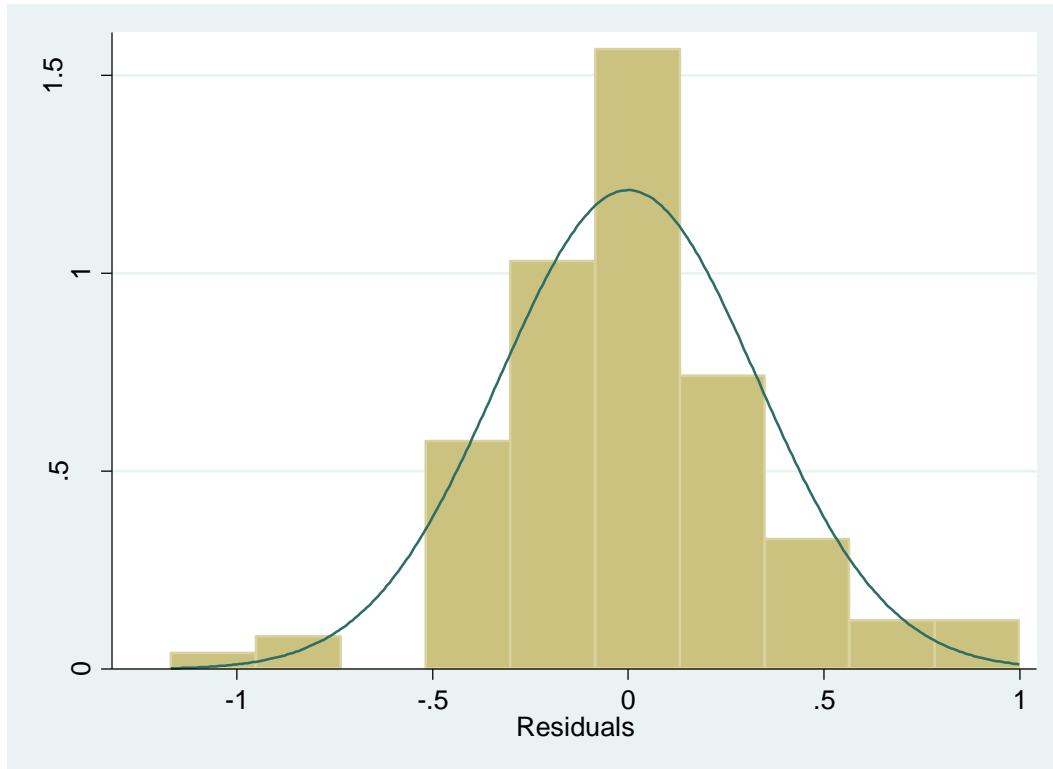
Source: Author's computation on Stata output

After the dependent variable transformed, the result of p-value greater than 0.05 meant that, the serial correlation was solved.

4.3.4 Assumption of (Normality) the disturbances are normally distributed ($u_t \sim N(0, \sigma^2)$)

This assumption is required to conduct single or joint hypothesis tests about the model parameters. In order to prove whether or not the model has normality problem, the researcher tested the error term by histogram. Since the histogram is bell shaped the normality problem was not encountered in the model. This provides the absence of the problem of normality.

Table 4.5: Normality test



Source: Stata output

4.3.5 Assumption of multicollinearity

According to this assumption, the explanatory variables are not correlated with each other. In any practical context, the correlation between explanatory variables will be non-zero, although this will generally be a relatively benign sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. However, a problem occurs when the explanatory variables are highly correlated with each other, and this problem is known as multicollinearity. In order to check the absence of a perfect multicollinearity variance inflation factor (VIF), the test conducted below.

Table 4.6: Multicollinearity test

Variables	VIF	1/VIF
TLATD	3.23	0.309171
RSAL	2.98	0.335247
LATD	1.85	0.540971
FEXRT	1.84	0.544799
FA	1.29	0.772987
OEOI	1.22	0.820902
NPLLAD	1.14	0.880670
Mean VIF	1.94	

Source: Author's computation on Stata output

With the above stata output we failed to reject null hypothesis of there is no perfect multicollinearity between independent variables since the variance inflation factor value more less than 10, which provide the evidence of the absence of perfect multicollinearity. Here, current asset composition has multicollinearity and as result the variable CA dropped out since it does not create variable omit bias as it indicated in below table.

4.3.6 Correlation Matrix

Table 4.2: Correlation analysis of independent variable

	FA	TLATD	LATD	NPLLAD	OEOI	RSAL	FEXRT
FA	1						
TLATD	0.09	1					
LATD	-0.39	-0.43	1				
NPLLAD	-0.16	-0.24	0.2	1			
OEOI	0.24	0.08	-0.3	-0.11	1		
RSAL	0.01	0.75	-0.47	-0.3	-0.03	1	
FEXRT	0.25	0.56	-0.45	0.15	0.3	0.29	1

Source: Author's computation on Stata output

In addition to the VIF test, a correlation matrix was used to test the absence of multicollinearity problems. Even though correlation does not show the cause and effect relationship of variables, rather it shows the direction and relationship (negative or positive) of variables, correlation analysis conducted shows that at what level the independent variables were inter-correlated. As the above correlation matrix table indicated, the highest inter-correlations between explanatory variables were below 0.8, so there was no potential multicollinearity problem for the study. In general, by the above two tests (VIF test and correlation matrix test), the assumption of multicollinearity was not violated.

4.4 Result and Discussion of Regression Analysis

For this research, the financial performance of Ethiopian private banks was measured by two performance indicators such as ROA and ROE, and two separate models were developed and regression analysis was conducted for each model.

4.4.1 Model selection and test

A model specification has been conducted in order to test the appropriate model that fits with the CLRM assumption. There are two types of panel estimator methods: fixed effect models and random effect modes. In order to select the correct model, the Hausman specification test was employed. Accordingly, the following hypotheses were tested:

H₀: Random effect model

H₁: Fixed effect model

Table 4.8: Hausman specification test

Variables	Model 1(ROA)	Model 2 (ROE
P value	0.000	0.2384

Source: Author's computation on Stata output

According to the above Hausman specification test, the study used fixed effect model for the first model and random effect model for model 1 and model 2 respectively since the P

value was 0.00 for model 1 and 0.23 for model 2. Hence, it's failed to accept the null hypothesis for model 1 and failed to reject the null hypothesis for model 2.

4.4.2 Result of Regression Analysis of ROA

Table 4.9: Regression result of random effect model

Variables	Model 1 (ROA)	Model 2 (ROE)
FA	-0.018 (-0.83) ^{NS}	-0.4448 (-1.87) ^{***}
TLATD	-0.007 (-0.11) ^{NS}	0.189 (2.79) [*]
LATD	0.023 (562) [*]	-0.278 (-6.24) [*]
NPLLAD	0.01 (0.36) ^{NS}	0.397 (1.25) ^{NS}
OEOI	-0.077 (-17.66) [*]	-0.578 (-12.48) [*]
RSAL	(0.017) (2.86) [*]	-0.37 (-5.59) [*]
FEXRT	0.036 (4.48) [*]	0.18 (2.09) [*]
Constant	4.98 (7.51) [*]	85.13 (12.15) [*]
Adjusted R ²	0.6853	0.6089
Observations	112	112
p-value	0.01	0.0000

Notes: figures in the bracket are z statistics

* Statistically significant at 1% level

** Statistically significant at 5% level

*** Statistically significant at 10% level

NS Statistically not significant

Source: own computation from Stata output

4.4.3 Discussions of Regression Results

Under this section detail discussions of the regression result for each model separately presented based on the above table.

Discussions of Fixed effect regression results on model 1(ROA)

According to the above regression result the first model was developed to measure the effect of ALM on financial performance Ethiopian private banks:

Model 1:

$$ROA_{it} = 4.98 - 0.018FA_{it} - 0.007TLATD_{it} + 0.0237LATD_{it} + 0.1NPLLAD_{it} - 0.0770EOI_{it} + 0.017RSAL_{it} + 0.036FEXRT_{it}$$

The above regression model depicted the statistical relationship between ROA assets and other independent variables. The above result indicated that the value of R-square indicates 68.5% of variations on ROA were explained by explanatory variables while the remaining 31.5% were not. In addition, the result of the statistics indicated the p-value was less than 0.05, which in turn is an indicator that the independent variables were significant at a 1% significant level. When we come to the relation of dependent and independent variables, from the total variables, all variables were significant at 5% except FA, TLATD, and LATD, which were not significant even at 10%.

Fixed asset composition: As the above regression result indicated, the coefficient of FA, which was measured by the fixed asset to total asset ratio, was a negative value of 0.018, which is not significant even at 10% level. The result showed that, holding other variables constant, a 1% increases in FA causes a 1.8% decreases in ROA or vice versa. According to this result, the study failed to accept the null hypothesis that fixed asset mix has a positive and significant effect on the performance of Ethiopian private banks. This negative relationship might be because, as the banks own more fixed assets, the banks' work in capital would be reduced and the banks might refrain from operating efficiently in income-generating activities. The findings of this study came in line with the findings of Gladys Mwaniki & Job Omagwa (2017) and rejected the findings of Razman B. Anuar, Mohamad B. Jais, Michael Tinggi (2021), Gladys Mwaniki and Job Omagwa, (2017), and Umobong and Agburuga, (2019).

Liquidity risk: For this study, the liquidity risk of Ethiopian private banks was identified by two indicators: total loan and advance to total deposit and liquid asset to total deposit. The coefficient regression result of TLATD indicates 0.007, which was negatively related to ROA. To be more specific, for every 1% increase in TLATD, ROA increases by 0.01 percent, while other variables remain constant but insignificant. With this result, the null hypothesis, which estimated TLATD would have a positive and significant effect on performance, is rejected. This unexpected negative relationship could be due to the bank's poor performance with a large number of loans and advances. This is due to their resources being employed on loans, and this resource might not be settled for years. As a result, this refrains them from investing in other fresh income generating investments. The finding was found to be genuine with the results of Ermiyas (2016), Ongore & Gemechu (2013), and Tesfaye (2014), and rejected the conclusion of Wondwesen (2018), Mulualem (2015), Skripsi (2019), Syafi'I & Rusliati (2016), Oluwafemi Israel et al. (2014), and Selble (2018). The other liquidity measurement for this study was the liquid asset to total deposit ratio. The regression value of this variable indicates 0.023 and is significant at a 1% level. This means that for every 1% change in LATD, ROA changes by 2.3% while all other variables remain constant. There is no evidence to reject the null hypothesis that LATD has a positive, significant effect on performance. The positive result shows that, indeed, when banks have liquid assets, they can freely involve income generating investments that could upsurge performance. The finding partially supported the results of Anteneh (2018), Melaku&Melaku A. (2017), and Melaku (2016) but found in contradiction with the results of Martha (2014), Bulti (2019), and Ermiyas (2016).

Credit quality (credit management): The asset quality coefficient, as measured by non-performing loan to total loan and advance, was positive, indicating that the NPLLAD has a positive and insignificant relationship with performance, i.e., ROA even at 10%. By this result, the researcher failed to accept the null hypothesis that NPLLAD has a negative and significant effect on performance. The coefficient of NPLLAD 0.01 indicated, holding other variables constant, 1 percent change in NPLLAD changes ROA by 1%. The finding supports

the previous results of Melaku & Melaku, A. (2017), Oluwafemi Israel et al. (2014), and Bulti (2019),

Operational efficiency: The regression result of operational efficiency measured by the total expense to total income shows a negative of 0.077. This implies that OEI has a negative and significant impact on performance as measured by ROA. As shown in the table, holding all other variables constant, a 1% change in OEI results in a 7.7% change in ROA in the opposite direction. This study failed to reject the null hypothesis that operational efficiency has a negative and significant impact on performance. The negative result shows when the operational cost beyond the operational income it in fact creates adverse effect on performance of Ethiopian private banks. This result comes in line with Syafi'I&Rusliati (2016), Novickyte&Petraitytė (2013) and Seble (2018) but rejected the findings of Kristianti&Yovin (2016), Muluaem (2015), Ermiyas (2016), Martha (2014), Bulti (2019) and Anteneh (2018).

Interest rate risk: The effect of macroeconomic factors on the performance of was denoted by two variables in this study: interest rate and foreign exchange rate. When we see the interest rate risk, the coefficient indicates that for one percent change in interest rate, the bank's performance varies by 1.8%. The study failed to accept the null hypothesis that interest rates have a negative and significant effect on performance since the coefficient implied that interest rates affected performance significantly at a 1% level. The findings supported the previous results of Zhongming et al (2019), Augustine, E. &Olusegun (2019), Tee (2017), Isaac (2015), Syafi'I&Rusliati (2016), Wondwesen (2018), Lagat&Nyandema (2016) and erected the findings of Abidemi, Ganiyu&Bamidele M. (2018), Girum (2020).

The other macroeconomic variable in this study was the average annual foreign exchange rate, measured by the exchange rate. The statistical value showed us FEXRT has a positive and significant effect on performance with a value of 0.036 at a 1 percent significant level. According to this result, the study failed to reject the null hypothesis that FEXRT has a positive and significant effect on performance. Holding other variables fixed, every 1% change in FEXRT causes a change of 3.6%. The positive relationship demonstrates that Ethiopian banks with large deposits in foreign banks and large foreign transactions (import

and export) affect their performance positively when there is an exchange rate appreciation and vice versa, even though the exchange rate on imports has a negative impact on bank performance. The research accepted the findings of Isaac (2015), Lagat&Nyandema (2016), Zhongming et al (2019), and rejected the conclusions of Elhoussein& Osman (2019), Wondwesen (2018), E. &Olusegun (2019), and Girum (2020).

Discussions of Random effect regression results on model 2(ROE)

According to the above regression result the second model was developed to measure the effect of ALM on financial performance Ethiopian private banks:

Model 2 (ROE):

$$ROE_{it}= 85.13-0.44FA_{it}+0.19TLATD_{it}-0.27LATD_{it}+0.39NPLLAD_{it}-0.58EOI_{it}-0.37RSAL_{it}+0.18FEXRT_{it}$$

The above regression model depicted the statistical relationship between ROE assets and other independent variables. The above result indicated that the value of R-square indicates 60% of variations on ROE were explained by explanatory variables while the remaining 40% were not. In addition, the result of the statistics indicated the p-value was less than 0.05, which in turn is an indicator that the independent variables were significant at a 1% significant level. When we come to the relation between dependent and independent variables, from the total variables, all variables were significant at 5% except NPLLAD, which was not significant even at 10%.

Fixed asset composition: as indicated by the regression results, the coefficient of FA measured by fixed asset to total asset has a negative and significant effect on ROE, but at the 10% confidence level. Keeping all other variables constant, a 1% change in FA results in a 44% change in ROE. Accordingly, the study rejected the null hypothesis that fixed asset composition has a positive and significant effect on performance since there was evidence that FA was negatively related. This negative relationship exists because when banks focus their resources on fixed asset investment, their investment in equity and other stock investments decreases, and as a result, their income from equity may decrease. The

findings supported the previous results of Umobong & Agburuga (2019) and rejected the findings of Razman B. Anuar et al. (2021), and Gladys Mwaniki& Job Omagwa (2017).

Liquidity: As we did on the ROA, the same regression was conducted with two proxies; TLATD and LATD. The result of liquidity measured by total loan and advance to total customer deposit indicates a positive relation to ROE with a value of 0.18, meaning that TLATD has a positive and significant effect on ROE at a 1% significant level. The study accepted the null hypothesis that TLATD had a positive and significant effect on performance. The result was in line with the findings of Anteneh (2018), Muluaem (2015) and rejected Ongore and Gemechu (2013), Oluwafemi et al. (2014), Skripsi (2019), Bulti (2019), Dawit (2016), Martha (2014). The liquid asset available for deposit was the other liquidity indicator. The value -0.27 of this variable was found to be negative as an indicator of holding more liquid assets has a negative and significant impact on ROE at the 1% significance level. When the firm holds more liquid idle assets, the firm pushes investment opportunities and, in turn, the income from those investments decreases.

Credit Quality: The value of credit management as measured by non-performing loans to total loans and advances shows a positive coefficient of 0.40. This means credit risk has a positive impact on ROE, despite its insignificant size. The study failed to accept the null hypothesis that credit risk has a negative and significant impact on performance. The result shows us that for every 1 percent change in NPLLAD, ROE changes by 40.0% in the same position. The study accepted the findings of Melaku&Melaku, A. (2017), and rejected the conclusions of Ongore and Gemechu, (2013); Gadzo, Kportorgbi&Gatsi, (2019); and Muriithi et al., (2016).

Operational efficiency: operational efficiency was measured by operational total cost to total gross earnings for the study. The statistical value of this variable tells us that operational efficiency has a negative and significant effect on ROE with a value of negative

0.59. This indicates when 1% change on OEI occurs then ROE changes by 59% opposite direction. With this value, the study failed to reject the null hypothesis that operational efficiency has a negative and significant effect on performance. The negative value, in fact, indicated that when the operational expense goes beyond gross earning, the bank's performance gets down. The study accepted the results of Ongore & Gemechu (2013) and found them in contradiction to the results of Anteneh (2018), Bulti (2019), and Mulualem (2015).

Interest rate risk: the interest rate risk measured by interest bearing asset to interest bearing liability has negative and significant effect on performance of Ethiopian private banks measured by ROE at 1% significant level. As the result indicated, for every 1% change in interest rate, ROE changes by 37%, holding other variables fixed. The study failed to reject the null hypothesis that interest rates have a negative and significant effect on performance. The negative relationship indicates that when interest rates rise, banks may focus their resources on interest-generating sectors such as loan lending, thereby pushing potential equity investments. The study accepted the findings of Isaac (2015) but rejected the findings of Augustine, E. & Olusegun (2019), Lagat & Nyandema (2016), Abidemi, Ganiyu & Bamidele M. (2018), and Tee (2017).

Exchange rate risk: the exchange rate measured by the average exchange rate has a positive value of 0.18 and a significant effect on performance, i.e., ROE at a 1% significant level. This is due to the fact that the value of the USD to ETB appreciates, and ROE also increases since almost all of the Ethiopian bank's investment is locally invested. The research failed to reject the null hypothesis that the exchange rate has a positive and significant effect on the performance of private banks. The study supported the findings of Lagat & Nyandema (2016) and rejected the findings of Elhusein & Osman (2019), Augustine, E. & Olusegun (2019) and Girum (2020).

4.5 Summary of regression result

Table 4.10: Summary of regression result on ROA

Independent variables	Expected relation	Actual relation	Statistical test for ROA	Decision
FA	Positive	Negative	Insignificant	Rejected
TLATD	Positive	Negative	Insignificant	Rejected
LATD	Positive	Positive	Significant at 1%	Failed to rejected
NPLLAD	Negative	Positive	Insignificant	Rejected
OEOI	Negative	Negative	Significant at 1%	Failed to reject
RSAL	Negative	Positive	Significant at 5%	Rejected
FEXRT	Positive	Positive	Significant at 1%	Failed to reject

Source: own summarization from the result

As shown in the summary table above, FA, TLATD, credit quality (denoted by NPLLAD), and interest rate risk (denoted by RSAL) were found to be contrary to the expected result. The adverse result might be when there is the more lending probability of getting to default also increases by so the return from asset also decreases though it is insignificant. In addition, the negative relationship with FA indicates that, as the banks own more fixed assets, the banks' work in capital would be reduced and the banks might refrain from operating efficiently in income-generating activities. The other deviated variable was RSAL. When there are more interest-bearing assets, an increase in interest rate may have a positive effect on ROA. The variable of FA asset was also found as the researcher hypothesized at the beginning, even though it was not statistically insignificant.

4.11. Summary of regression result on ROE model

Independent variables	Expected relation	Actual relation	Statistical test for ROE	Decision
FA	Positive	Negative	Insignificant at 5%	Rejected
TLATD	Positive	positive	Significant at 1%	Failed Rejected
LATD	Positive	Negative	Significant at 1%	Rejected
NPLLAD	Negative	Positive	Insignificant	Rejected
OEOI	Negative	Negative	Significant at 1%	Failed to reject
RSAL	Negative	Negative	Significant at 1%	Failed to reject
FEXRT	Positive	Positive	Significant at 5%	Failed to reject

Source: own summarization from the result

As the above table implied, variables FA NPLLAD and LATD found varied from the researcher prior expectations. The possible reason might be when there is more liquid asset; it is an indicator that the firm has been push investments that could generate additional income. Additionally, the negative result of FA could be when the firm holds more fixed asset, in fact it income generating investments were stuck or reduced due most resources are employed on fixed assets.

Chapter Five

Summary, Conclusion and Recommendation

This chapter presented the conclusions of the findings which were discussed in the previous chapter and also provided appropriate suggestions which could be to the financial industry and its stakeholders for their asset and liability management. This chapter contained two sections: the conclusion part and the recommendation part, and this part is presented here under:

5.1 Summary

The main objective of this paper was to examine the effect of asset liability on the performance of Ethiopian private banks. The study attempted to investigate the effects of asset composition, liquidity, credit quality, operational efficiency, interest rate, and exchange rate on the above-mentioned banks' performance. In order to meet this objective, the study used quantitative research methods and explanatory research design in order to identify and evaluate cause and effect relationships between the dependent and independent variables. Moreover panel data of 16 Ethiopian private banks was collected from national bank of Ethiopia covering a period from 2014 through 2020. These panel data were analyzed by using random effect regression model by utilizing STATA 14.2 econometric software package.

In the study, Generalized Least Square estimation method was used to solve heteroskedasticity problem. During data statistical analysis, the research used two dependent variables; ROA and ROE; and independent variables such as fixed asset composition, total loan and advance to total deposit, liquid asset to total deposit, non-performing loan to total loan and advance. Total expense to total gross revenue, rate sensitive asset to rate-sensitive liability, and average annual exchange rate were considered. Current asset composition, which was considered as an independent variable, was dropped out due to its multicollinearity problem.

As the regression result implied, the average profitability of Ethiopian private banks was 2.8% and 19.8%, with a standard deviation of 0.8% and 5.7%, respectively, for ROA and ROE. Among the independent variables, the one with the largest deviation was LATD at 10%, followed by TLATD, which has an 8.6% variation across the period of 2014 to 2020. This shows that Ethiopian private banks have almost the same status for the above listed variables.

As the R^2 on the regression result shows, 68% and 60% variations were explained by the independent variables while the remaining 32% 40% was not. Accordingly both models were appropriate since the largest portion of variation has been explained by those variables. Furthermore, the regression result showed the following relation between dependent and independent variables.

5.2 Conclusions

This section provided the major findings of the study.

- This study provided evidence that fixed asset composition has negative effect on performance. However, this variable was not significant to both ROA and ROE.
- From the liquidity proxy, TLATD has a positive effect on ROE while it has a negative impact on ROA, but this variable was significant only for ROE. And the other liquidity indicator, which was LATD, has a positive and significant impact on ROA while it has a negative and significant impact on ROE. This variable was found the major determinant that affect performance in this study. Indeed, liquid assets are the main engine that makes the bank turnaround. It enables them to pay obligations and lend fresh loans and advances. If there is a liquidity problem, the operating actively could totally avert.
- The liquidity preference theory, which states that firms should maintain an optimum level of liquidity to able to grasp opportunity that promise higher return in the future means that in order to be profitable and stable in the sector its necessary to manage and coordinate asset and liability especially in the finance sectors, best explains the finding of this study.
- The other explanatory variable; credit quality, as measured by non-performing loans to total outstanding loans and advances, has a positive impact on ROA and

ROE. However, this variable was insignificant for both performance indicators in this study.

- Operational efficiency, as denoted by OEOL, has a negative and significant effect on ROA and ROE. This indicates that when the management's efficiency is not that good, it could cause bad performance, whatever the measurement of performance is. This variable was the most determinant factor for banks' performance in this study for both of the performance indicators.
- This study has included macroeconomic variables which are deemed bank specific determinants such as interest rates and exchange rates, even though they affect other sectors and other macroeconomic variables affect banks' performance as well. The empirical result showed that interest rate risk, denoted by RSAL, has a significant positive effect on ROA. In contrast, RSAL has a negative and significant effect on ROE. The positive relationship implies that when there are more rate-sensitive assets such as loans and investments than liabilities, the bank's performance increases as interest rates go up. And the negative relationship also indicates that when interest increases, banks could employ their resources on interest generating sectors such as loan lending and push potential equity investments, so ROE would be reduced.
- Foreign exchange rate was positively related to both of two performance indicators by this study. This indicates in fact that when the exchange rate appreciates the return from exchange sensitive asset such as appreciation from foreign bank deposit; commission income from import and export (equivalent birr value) also increases.

5.2 Recommendations

The empirical study provided supportive evidence that the performance of private banks in Ethiopia is determined by the bank's specific balance sheet risks such as credit risk, liquidity risk, operational risk, and market risk variables. Therefore, policymakers should give due attention to producing and executing an appropriate method to maintain an optimum level of performance. Furthermore, the researcher provided the following recommendations based on the findings of the paper:

- The study found that liquidity was the determinant factor that affected Ethiopian commercial banks' performance. Hence, it is advised for banks to maintain a balanced level of liquidity.
- The finding implied that operational efficiency was the major determinant of the performance of Ethiopian private banks. It is a fact that operational efficiency increases by pulling operating costs down and or operational income up. In order to achieve this objective banks have aggressively to intend in non-funded activities such as commotion based income sources and by giving due effort in collecting interest free deposits. So, it was recommended that banks engage in the above activities.
- According to the results of this study, the performance of Ethiopian private banks was also affected by macroeconomic variables such as interest and exchange rates. So banks have to maintain optimal level of on and off-balance sheet items such as loans, deposits, and foreign currency assets and liabilities as such in a way to improve their performance by taking continues their own risk assessments about firm and non-firm specific factors. So it's recommended that banks have to do the same.
- This study used the composition of assets in addition to bank specific balance sheet risk in relation to asset and liability management. The study, however, used asset compositions that the banks held by grouping them only into current and fixed assets, in addition to bank-specific balance sheet risks, to measure their performance. In this case, the study recommended that the next researcher

(s) include other asset components such as property, plant, and equipment, intangible assets, and liability side compositions in their study.

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Appendices

Appendix I: panel data considered in the study

BANKS	YEARS	ROE	ROA	FA	CA	TLATD	LATD	NPLLAD	OEOI	RSAL	FEXRT
AB	2014	14.58	2.24	2.03	97.97	59.29	34.17	1.22	74.25	83.95	19.64873
AB	2015	21.48	3.23	2.29	97.71	64.59	24.61	1.25	66.28	92.91	20.5586
AB	2016	17.54	2.73	2.39	97.61	64.53	23.34	1.44	69.67	95.94	21.89439
AB	2017	15.36	2.34	2.82	97.18	63.06	26.81	1.13	70.66	92.26	23.77593
AB	2018	20.38	3.02	2.06	97.94	63.41	30.84	1.74	68.04	94.66	27.42137
AB	2019	23.54	3.66	2.02	97.98	66.49	28.13	1.48	62.50	97.75	29.12209
AB	2020	18.07	2.84	1.37	98.63	73.01	24.80	1.19	68.45	96.56	35.09063
AIB	2014	27.25	3.42	3.18	96.82	61.01	33.65	2.27	56.87	87.08	19.64873
AIB	2015	22.98	2.94	3.80	96.20	67.40	20.96	1.74	62.57	95.56	20.5586
AIB	2016	21.54	2.78	3.93	96.07	67.67	25.37	1.53	65.09	90.27	21.89439
AIB	2017	23.67	2.80	2.85	97.15	73.80	22.88	1.46	64.12	95.52	23.77593
AIB	2018	31.31	3.07	4.38	95.62	72.04	26.77	0.82	63.72	91.19	27.42137
AIB	2019	41.09	3.76	3.41	96.59	79.28	19.07	0.86	58.49	98.55	29.12209
AIB	2020	32.42	3.17	3.33	96.67	81.15	20.46	1.74	64.74	98.27	35.09063
ADIB	2014	16.52	4.10	3.77	96.23	64.49	54.43	1.10	58.76	87.22	19.64873
ADIB	2015	15.31	3.91	3.04	96.96	69.54	44.12	1.19	62.44	98.55	20.5586
ADIB	2016	15.24	3.95	2.36	97.64	68.04	49.11	1.26	62.36	97.55	21.89439
ADIB	2017	13.24	3.14	1.83	98.17	69.61	40.56	1.24	68.69	97.58	23.77593
ADIB	2018	13.60	2.96	2.36	97.64	69.25	34.89	0.90	69.69	96.67	27.42137
ADIB	2019	15.81	3.27	1.85	98.15	67.84	33.60	1.08	69.33	95.10	29.12209
ADIB	2020	17.27	3.55	1.66	98.34	75.11	31.98	0.91	66.92	94.29	35.09063
BOA	2014	20.53	2.53	2.58	97.42	56.65	30.19	1.79	65.30	87.34	19.64873
BOA	2015	17.47	2.34	6.40	93.60	53.93	25.95	1.51	69.02	83.73	20.5586
BOA	2016	18.33	2.36	6.42	93.58	59.56	22.76	1.35	71.37	86.00	21.89439
BOA	2017	22.68	2.71	4.90	95.10	68.14	16.61	1.26	69.22	92.42	23.77593
BOA	2018	15.74	1.96	5.60	94.40	69.75	17.41	1.17	76.61	94.16	27.42137
BOA	2019	16.90	2.18	4.97	95.03	73.83	13.91	1.32	76.12	96.70	29.12209
BOA	2020	16.06	1.78	7.10	92.90	78.21	13.35	1.21	80.97	92.12	35.09063
BRIB	2014	9.62	1.80	1.02	98.98	58.89	48.79	1.63	69.55	85.78	19.64873
BRIB	2015	16.19	2.97	1.31	98.69	61.99	40.52	1.39	63.05	88.28	20.5586
BRIB	2017	29.75	4.68	0.89	99.11	70.94	29.39	1.48	55.12	99.85	21.89439
BRIB	2016	22.41	3.73	1.52	98.48	70.22	31.61	1.44	59.53	98.16	23.77593
BRIB	2018	16.04	2.67	1.53	98.47	66.21	24.64	1.73	73.45	93.34	27.42137
BRIB	2019	18.33	2.76	1.91	98.09	68.27	20.43	1.79	73.62	95.73	29.12209
BRIB	2020	17.78	2.73	4.26	95.74	76.57	16.83	1.59	75.17	98.42	35.09063
BUIB	2014	17.95	3.11	2.06	97.94	63.19	18.76	1.21	63.66	90.80	19.64873
BUIB	2015	22.52	3.58	1.96	98.04	69.86	23.41	1.15	62.27	98.68	20.5586
BUIB	2016	22.88	3.31	1.65	98.35	68.62	23.27	1.70	65.86	97.51	21.89439
BUIB	2017	17.40	2.42	1.92	98.08	70.73	27.58	1.67	71.32	96.80	23.77593
BUIB	2018	18.90	2.76	1.31	98.69	69.79	26.84	1.45	69.32	98.07	27.42137
BUIB	2019	20.27	3.35	2.14	97.86	78.22	21.58	1.59	65.89	108.37	29.12209
BUIB	2020	15.63	2.64	3.35	96.65	84.74	22.22	1.77	73.20	107.31	35.09063
CBO	2014	38.42	4.94	1.79	98.21	68.12	32.25	1.84	46.14	84.72	19.64873
CBO	2015	24.98	3.32	1.72	98.28	91.46	33.08	2.56	60.77	110.32	20.5586
CBO	2016	2.97	0.35	2.31	97.69	72.77	25.14	5.27	96.57	90.53	21.89439
CBO	2017	15.18	1.46	2.18	97.82	70.05	24.42	3.22	84.29	91.32	23.77593
CBO	2018	22.57	1.84	1.87	98.13	58.38	31.43	2.35	76.65	78.20	27.42137
CBO	2019	23.22	1.84	1.81	98.19	61.27	25.91	3.41	79.34	82.30	29.12209
CBO	2020	28.16	2.51	1.87	98.13	66.31	14.99	2.80	75.22	94.20	35.09063
DB	2014	30.69	3.42	2.73	97.27	54.34	37.00	1.85	55.36	76.63	19.64873
DB	2015	26.41	3.12	2.76	97.24	58.18	27.91	1.68	61.68	86.77	20.5586
DB	2016	23.15	2.73	2.80	97.20	55.78	30.19	1.71	65.22	83.34	21.89439
DB	2017	20.57	2.39	2.40	97.60	65.09	18.91	2.02	71.31	93.58	23.77593
DB	2018	18.84	2.32	6.19	93.81	64.71	19.57	0.98	74.19	94.76	27.42137

DB	2019	16.00	2.00	5.37	94.63	72.84	13.39	0.65	76.11	102.09	29.12209
DB	2020	20.28	2.47	5.87	94.13	78.81	14.11	0.22	75.16	104.32	35.09063
DGB	2014	12.53	2.94	2.18	97.82	54.05	58.79	1.39	76.12	72.68	19.64873
DGB	2015	8.58	1.70	3.77	96.23	41.36	61.91	1.18	79.42	60.92	20.5586
DGB	2016	19.11	4.24	3.18	96.82	68.75	28.65	1.34	63.66	102.80	21.89439
DGB	2017	13.65	3.03	2.02	97.98	55.48	47.71	1.70	70.94	85.40	23.77593
DGB	2018	19.30	4.01	1.26	98.74	73.41	38.31	1.72	66.23	104.85	27.42137
DGB	2019	25.14	4.82	1.36	98.64	69.58	44.92	2.06	59.16	100.06	29.12209
DGB	2020	24.32	4.40	1.79	98.21	85.42	30.22	0.91	45.93	105.74	35.09063
EB	2014	17.92	3.67	1.45	98.55	54.52	46.21	0.00	75.19	98.11	19.64873
EB	2015	14.34	2.90	1.91	98.09	72.42	32.08	0.00	67.59	96.52	20.5586
EB	2016	14.26	2.90	2.23	97.77	68.01	27.93	0.27	67.40	96.86	21.89439
EB	2017	11.97	2.33	1.79	98.21	66.99	29.49	0.63	74.25	93.32	23.77593
EB	2018	15.16	2.80	1.92	98.08	67.01	26.28	0.62	71.18	94.64	27.42137
EB	2019	14.81	2.57	1.47	98.53	72.11	23.81	0.77	76.45	98.98	29.12209
EB	2020	12.51	2.05	1.38	98.62	77.91	27.62	1.18	81.97	97.68	35.09063
HB	2014	20.04	2.54	1.49	98.51	53.92	35.99	1.44	65.34	84.39	19.64873
HB	2015	17.25	2.14	2.50	97.50	58.11	23.07	1.22	73.14	92.41	20.5586
HB	2016	18.04	2.14	2.83	97.17	65.46	22.39	1.30	74.40	98.73	21.89439
HB	2017	16.64	1.95	3.34	96.66	72.68	19.31	1.24	75.70	101.65	23.77593
HB	2018	20.98	2.30	4.45	95.55	65.28	19.61	1.30	75.48	92.02	27.42137
HB	2019	22.08	2.36	4.38	95.62	74.70	13.17	0.51	78.10	100.16	29.12209
HB	2020	19.40	2.27	5.28	94.72	79.01	15.30	0.68	84.93	97.17	35.09063
LIB	2014	16.51	2.95	1.34	98.66	58.13	42.05	1.34	62.82	84.36	19.64873
LIB	2015	20.77	3.18	1.12	98.88	64.57	34.45	1.66	64.72	91.82	20.5586
LIB	2016	20.74	2.81	1.13	98.87	69.31	28.95	1.97	68.23	94.86	21.89439
LIB	2017	21.32	2.81	1.02	98.98	63.80	30.44	2.01	66.34	90.05	23.77593
LIB	2018	23.99	3.09	1.04	98.96	64.96	25.94	2.48	68.13	92.04	27.42137
LIB	2019	24.68	3.11	1.00	99.00	72.29	22.01	1.94	68.64	97.01	29.12209
LIB	2020	21.29	2.47	2.84	97.16	74.84	26.38	2.43	74.90	88.31	35.09063
NIB	2014	16.38	2.99	2.04	97.96	69.71	24.18	2.10	54.10	102.98	19.64873
NIB	2015	16.28	2.81	2.30	97.70	71.61	18.39	1.50	63.53	110.02	20.5586
NIB	2016	16.60	2.68	2.49	97.51	61.56	23.97	1.77	65.63	95.03	21.89439
NIB	2017	16.21	2.41	2.48	97.52	39.36	11.86	1.63	64.99	97.09	23.77593
NIB	2018	16.26	2.16	7.23	92.77	63.39	17.97	1.50	73.55	91.59	27.42137
NIB	2019	18.50	2.39	6.88	93.12	70.27	14.21	0.98	72.16	94.67	29.12209
NIB	2020	20.47	2.74	6.50	93.50	76.64	15.86	0.84	71.29	96.58	35.09063
OIB	2014	23.74	3.06	1.85	98.15	51.26	37.26	1.31	62.33	73.56	19.64873
OIB	2015	25.47	2.83	1.92	98.08	59.55	20.92	1.27	65.30	86.89	20.5586
OIB	2016	13.43	1.49	4.49	95.51	56.25	22.98	1.76	78.62	81.39	21.89439
OIB	2017	19.33	2.09	3.22	96.78	53.49	24.74	1.86	74.65	78.43	23.77593
OIB	2018	34.19	3.63	2.70	97.30	58.62	29.15	0.79	62.00	82.87	27.42137
OIB	2019	23.66	2.68	2.44	97.56	65.77	19.26	1.56	69.01	91.70	29.12209
OIB	2020	20.71	2.62	2.41	97.59	62.73	19.18	1.33	72.23	92.95	35.09063
WB	2014	16.02	2.91	4.67	95.33	54.91	35.85	1.67	61.28	90.59	19.64873
WB	2015	15.46	2.79	4.68	95.32	62.50	24.79	1.58	65.88	104.26	20.5586
WB	2016	14.39	2.51	4.57	95.43	68.87	27.96	1.63	68.79	107.56	21.89439
WB	2017	17.27	2.87	4.54	95.46	74.03	27.85	1.37	66.96	109.86	23.77593
WB	2018	22.10	3.28	4.93	95.07	73.38	19.74	1.75	65.99	103.46	27.42137
WB	2019	15.29	2.17	4.79	95.21	69.87	17.97	2.16	77.09	98.00	29.12209
WB	2020	17.69	2.45	4.29	95.71	78.80	18.50	1.96	75.61	98.11	35.09063
ZB	2014	31.98	5.13	1.90	98.10	47.18	49.28	8.83	51.57	74.43	19.64873
ZB	2015	21.57	3.48	1.41	98.59	59.71	30.19	5.53	60.06	92.21	20.5586
ZB	2016	22.96	3.31	1.05	98.95	62.04	40.25	4.41	61.61	89.29	21.89439
ZB	2017	21.53	2.93	5.21	94.79	56.81	42.01	4.56	63.13	78.73	23.77593
ZB	2018	17.70	2.45	4.25	95.75	50.95	39.58	3.23	69.86	73.04	27.42137
ZB	2019	23.71	3.56	4.92	95.08	66.90	21.74	2.16	59.83	93.23	29.12209
ZB	2020	27.10	4.45	4.62	95.38	68.81	30.29	1.75	53.47	87.17	35.09063

Appendix II: Descriptive statistics

```
. sum ROE ROA NIM CA FA TLATD LATD NPLLAD OEOI RSAL FEXRT
```

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	112	19.78888	5.727472	2.966087	41.08975
ROA	112	2.868659	.7563985	.3524388	5.126916
NIM	112	5.61762	1.419148	2.377393	8.793977
CA	112	97.05869	1.578551	92.77053	99.10561
FA	112	2.94131	1.578551	.8943908	7.229468
TLATD	112	66.39369	8.694806	39.35991	91.45538
LATD	112	27.89253	10.06485	11.86362	61.90968
NPLLAD	112	1.672797	1.106806	0	8.830813
OEOI	112	68.28705	7.834176	45.93	96.57391
RSAL	112	93.11857	8.5549	60.92096	110.322
FEXRT	112	25.35882	5.139909	19.64873	35.09063

Appendix III: correlation matrix between independent variables

```
. corr FA TLATD LATD NPLLAD OEOI RSAL FEXRT
(obs=112)
```

	FA	TLATD	LATD	NPLLAD	OEOI	RSAL	FEXRT
FA	1.0000						
TLATD	0.0941	1.0000					
LATD	-0.3968	-0.4287	1.0000				
NPLLAD	-0.1569	-0.2402	0.1996	1.0000			
OEOI	0.2446	0.0763	-0.2971	-0.1071	1.0000		
RSAL	0.0123	0.7503	-0.4702	-0.2976	-0.0310	1.0000	
FEXRT	0.2526	0.5578	-0.4513	-0.1458	0.2972	0.2922	1.0000

Appendix IV: diagnostic test

Breusch-Godfrey LM test for autocorrelation

Model 1

```
. estat bgodfrey
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	0.109	1	0.7415

H0: no serial correlation

Model 2

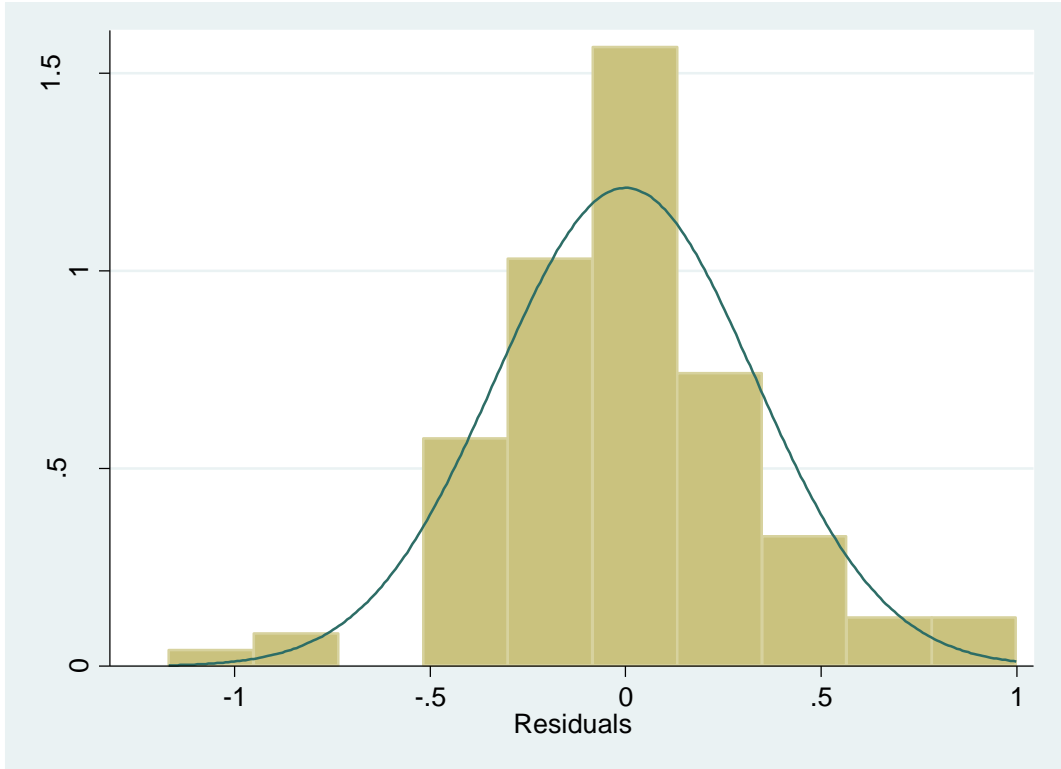
```
. estat bgodfrey
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	0.152	1	0.6970

H0: no serial correlation

Normality test



Test for multicolleniarity

```
. estat vif
```

Variable	VIF	1/VIF
TLATD	3.23	0.309249
RSAL	2.98	0.335668
LATD	1.85	0.540971
FEXRT	1.84	0.544251
FA	1.29	0.775006
OEOI	1.22	0.821196
NPLLAD	1.14	0.880473
Mean VIF	1.93	

Appendix V: Model specification test

Model 1 (ROA)

. hausman fe re

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
FA	.0841103	-.0186161	.1027264	.028592
TLATD	-.0076277	-.0007215	-.0069062	.0037745
LATD	.0037139	.0237061	-.0199921	.0053826
NPLLAD	.114696	.0107275	.1039685	.0385722
OEOI	-.0887319	-.0775419	-.01119	.003201
RSAL	.0185247	.0179661	.0005586	.0050524
FEXRT	.0257564	.0368135	-.0110571	.0038281

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 47.75
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)

Model two (ROE)

. hausman fe re

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
FA	.0720144	-.2489375	.320952	.2045614
TLATD	-.0315457	.0802455	-.1117912	.0177188
LATD	-.0672435	-.1998006	.1325571	.0374769
NPLLAD	.4426278	.4094102	.0332176	.2790299
OEOI	-.6154457	-.596305	-.0191407	.0207124
RSAL	-.0729286	-.237265	.1643364	.0295256
FEXRT	.4096055	.2820955	.12751	.0180504

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 9.20
 Prob>chi2 = 0.2384
 (V_b-V_B is not positive definite)

Regression result of fixed effect model for ROA

```
. xtglm ROA FA TLATD LATD NPLLAD OEOI RSAL FEXRT
```

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

```
Estimated covariances      =          1      Number of obs      =       112
Estimated autocorrelations =          0      Number of groups   =        16
Estimated coefficients      =          8      Time periods       =         7
Wald chi2(7)               =       477.10
Prob > chi2                =         0.0000
Log likelihood              = -34.18508
```

ROA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
FA	-.0186161	.0224547	-0.83	0.407	-.0626265	.0253943
TLATD	-.0007215	.0064461	-0.11	0.911	-.0133557	.0119126
LATD	.0237061	.0042168	5.62	0.000	.0154413	.0319708
NPLLAD	.0107275	.0300041	0.36	0.721	-.0480794	.0695343
OEOI	-.0775419	.0043906	-17.66	0.000	-.0861474	-.0689365
RSAL	.0179661	.0062918	2.86	0.004	.0056344	.0302979
FEXRT	.0368135	.0082146	4.48	0.000	.0207132	.0529137
_cons	4.980738	.6629082	7.51	0.000	3.681461	6.280014

Regression result of random effect model for ROE

```
. xtglm ROE FA TLATD LATD NPLLAD OEOI RSAL FEXRT
```

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

```
Estimated covariances      =          1      Number of obs      =       112
Estimated autocorrelations =          0      Number of groups   =        16
Estimated coefficients      =          8      Time periods       =         7
Wald chi2(7)               =       190.44
Prob > chi2                =         0.0000
Log likelihood              = -298.2597
```

ROE	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
FA	-.4448306	.237296	-1.87	0.061	-.9099222	.0202611
TLATD	.1898305	.0681211	2.79	0.005	.0563156	.3233454
LATD	-.2782371	.044562	-6.24	0.000	-.3655771	-.1908971
NPLLAD	.3970353	.317076	1.25	0.211	-.2244222	1.018493
OEOI	-.5788578	.0463991	-12.48	0.000	-.6697983	-.4879172
RSAL	-.371792	.0664905	-5.59	0.000	-.5021111	-.2414729
FEXRT	.1817261	.0868096	2.09	0.036	.0115824	.3518699
_cons	85.13093	7.005464	12.15	0.000	71.40047	98.86139