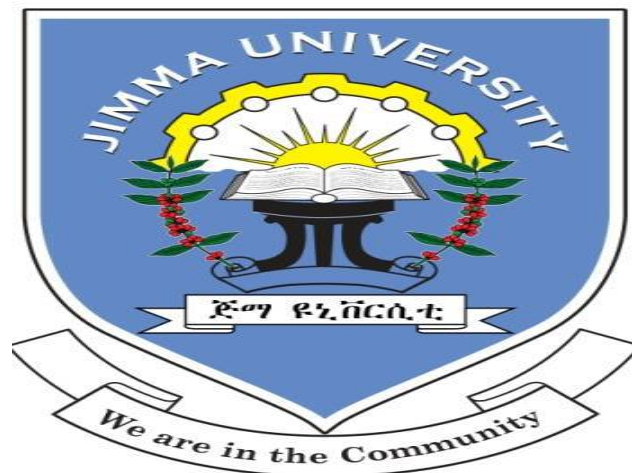


*Effect of income diversification on bank performance: In case of  
commercial banks in Ethiopia*

*A Thesis Submitted to the School of Graduate Studies of Jimma  
University in Partial Fulfillment of the Requirements for the Award of  
the Degree of Master of Science in Accounting and Finance (MSc).*

By: Bahiru Ketema



JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

August, 2020

JIMMA, ETHIOPIA

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August, 2020

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## DECLARATION

I, **Bahiru Ketema**, hereby declare that this thesis entitled “**effect of income diversification on bank’s performance: In case of commercial banks in Ethiopia**” is my own work except where otherwise indicated and acknowledged. This thesis has been carried out by me under the guidance and supervision of **Dr. Arega Seyoum** and **Ms. Gelila Eshetu**.

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The thesis is original and has not been submitted for the award of degree or diploma in any university or institution.

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Researcher’ s Name

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Date

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Signature

## CERTIFICATE

This is to certify that the thesis entities “**Effect of income diversification on bank’s performance: In case of commercial banks in Ethiopia**” submitted to Jimma University for the award of the Degree of Master of Science in Accounting and Finance is a record of Valuable research work carried out by **Bahiru Ketema**, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

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**MSC IN ACCOUNTING AND FINANCE PROGRAM**

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**Approval Sheet**

**Members of the Board of Examiners**

As members of the Examining Board of the Final Open Defense, we certify that we have read and evaluated the thesis prepared by Bahiru Ketema, entitled “Effect of income diversification on bank performance: In case of commercial banks in Ethiopia”, and recommend that it be accepted as fulfilling the thesis requirements for the award of the degree in Master of science in Accounting and Finance.

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August, 2020

JIMMA, ETHIOPIA

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## ***Abstract***

*This thesis investigates the relationship between income diversification and bank performances evidence from Ethiopian commercial banks. The study used 17 banks (16 privates and 1 public) from 2014 to 2018 year. The thesis employed pooled OLS model, Fixed Effect model, differenced fixed effect and Random Effect model. The panel data was presented by using descriptive statistics. The proxy (dependent variable) used to estimate performances was return on assets (ROA). The researcher used income diversification (non-interest income) as independent variables. The econometric evidence showed positive and significant association between diversification (non-interest income) and bank performance. This in part justifies policy actions that promote diversification. The coefficient for exchange rate and inflation rate have shown positive and significant association with bank performance. Furthermore, the coefficient for bank equity have shown positive and significant association with bank performance. From a policy point of view the finding suggests that bank regulations which might tend to increase the level of income diversification (non-interest income) should be evaluated carefully.*

**KEY WORDS:** Return on asset, income diversification, bank performance

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## **ACRONYMS/ABBREVIATIONS**

<b>ATM:</b>	Automated teller machine
<b>EBIT:</b>	Earnings before interest and tax
<b>EXCH:</b>	Value for Exchange Rate in ETB
<b>EU:</b>	European Union
<b>FE:</b>	Fixed Effect
<b>GDP:</b>	Gross Domestic Product
<b>HHI:</b>	Herfindahl Hirschman Index
<b>IMF:</b>	International Monetary Fund
<b>INF:</b>	Inflation Rate
<b>NBE:</b>	National Bank of Ethiopia
<b>NOI:</b>	Net Operating Income
<b>NON:</b>	Non- Interest Income
<b>POLS:</b>	Pooled Ordinary Least Square
<b>ROA:</b>	Return on Asset
<b>RE:</b>	Random Effect
<b>ROE:</b>	Return on Equity
<b>ROIC:</b>	Return on Invested Capital
<b>RBV:</b>	Resource Based View Theory
<b>VIF:</b>	Variance Inflation Factor
<b>WB:</b>	World Bank
<b>WACC:</b>	Weighted Average Cost of Capital

# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 Background of the study

At present day, banks' performance gets a great deal of attention in the economic literatures considering that banks serve a pivotal role in the economy. This attention has grown ever since the stream of bank failures experienced in the United States of America during the great depression (1940) and the recent global financial crisis of 2007/2008 that resulted in Reduction of financial inflows from the rest of the world to developing countries. These historical facts have demonstrated the importance of bank performance not only for developed countries but also for developing one Lepetit et al. (2008). Given that most developing countries including, Ethiopia, have been basing their economic growth on exports, and existing unreliable banks' own performance; managing risk from external factors like global financial crisis and banks' own organizational affecting factors have become a major concern of policy makers. The question is now, how do developing countries minimize risk and exhibit reliable bank performance?

Various empirical studies have speculated that risk that arises from banks' own organizational factors can be managed through diversification of source of income in a way that it will improve their performance. They pointed that banks' that are only sources their revenue from conventional source like interest paid on deposits and interest receive from loan and the like have faced risks associated with those flows like, Liquidity risk associated with deposits, Credit risks associated with loans, Market risk associated with fixed income securities and Interest rate risk associated with the relative maturities of deposits, loans and securities. However, banks with more diversified income source like using an increased portion of income from non-intermediation and or non-interest income activities such as transaction fees and fees for services provided, for example, underwriting, insurance, trading and securitization, fiduciary duties etc. will lead to a lower risk level and a higher risk-adjusted performance. The justification for their claim is that these non-interest incomes are uncorrelated or imperfectly correlated with net interest income, diversification of income sources should make net operating income of a bank more stable DeYoung & Roland (2001).

As opposed to the aforementioned claim, there are studies that have found non-interest income tends to be more volatile Stiroh, (2004) and DeYoung and Roland, (2001). They indicated that

due to an increased in cross-selling, if the correlation between interest and non-interest income increases, the benefits of diversification might retreat. De Young and Roland, (2001) emphasized three main reasons why non-interest income may increase the volatility of bank operating income:

- Loan-based activities require higher switching costs as compared to fee-based activities.
- Lending activities require lower operating leverage than fee-based activities,
- Lending activities require lower financial leverage than fee-based activities.

In Ethiopia, banking industry too has been seen progressively shifting away from traditional sources of revenue like loan-making etc., towards non-traditional activities that generate fee income, service charges, trading revenue and other types of non-interest income Tamirat Shawel, (2014). However, the trend of diversification of income source in Ethiopian commercial banks is varying from bank to bank across years. Despite researching on this issue has of paramount importance both for banking industry and policy feedback, it is not well investigated. In this study, therefore, the effect of income diversification on performance of commercial banks in Ethiopia was investigated.

## **1.2 Statement of the Problem**

Most developing countries including, Ethiopia, have been basing their economic growth on exports, and existing unreliable banks' own performance; managing risk from external factors like global financial crisis and banks' own organizational affecting factors have become a major concern of policy makers. In this regard, most of the economics scholars and credible institutions like WB and IMF have subscribe diversification of income source for banking industry with the underlying objective of reducing risk and improving returns. Yet, there is evidence that showed the benefits of diversification might retreat Stiroh, (2004). For instance, the trend of income diversification in Ethiopian commercial banks is varying both bank to bank across years. Yet, whether the issue has significant impact on banks performance is not well investigated.

Evidence showed that banks with more diversified income source such as usage of transaction fees and fees for services provided like underwriting, insurance, trading and securitization, fiduciary duties will lead to a lower risk level and a higher risk-adjusted performance. According to Lepetit et al. (2008), the profitability of banks which depends on only interest

income is highly affected by interest fluctuation and loan default risk. But banks which diversify their income source can increase their profit since non-interest income never affected by interest fluctuation and loan default risk. This claim is supported by various research findings in developed countries. For instance an empirical study by Rumble (2006) in US commercial banks indicated there was significant and positive correlation between diversification of income source and bank performance. Yet, in the contrary, previous studies by Stiroh (2004); De Young & Rice (2004) and Stiroh & Rumble (2006) indicate a worse risk-return for USA commercial banks venturing into income source diversification. In support of this finding, Chiarozza (2008); Baele (2007) and Staikouras & Wood (2003) show that income source diversification to increases risk-return trade-off for European banks.

In developing economy like Ethiopia, a financial sector is characterized by fragility, volatile interest rates, high-risk investment and inefficiencies in the intermediation process Shawn, (2002). This high-risk investment and inefficiencies of banking industry in developing countries will likely affect, negatively their performance. Empirical evidence from Sanya & Wolfe, (2011), underline that the usage of diversified income source by this sector will in part improve banking industry performance. Their finding on emerging economy countries showed that diversification across and within both interest and non-interest income generating activities decrease insolvency risk and enhance profitability.

However, the trend of diversification of income source in Ethiopian commercial banks is varying from bank to bank across years. Yet, whether the issue has significant impact on banks performance is not well investigated. To the best of the researcher's knowledge, relatively similar empirical study that investigated the issue is that of Estifanos, (2014). Using only eight commercial banks data, he has investigated the impact of non-interest income, proxy for diversification, on bank profitability. He indicated that bank relative performance and loan quality from bank-specific factors and exchange rate volatility from macro-economic factors are the most influential factors on non-interest income of Ethiopian commercial banks. However, his study is limited to Pooled OLS and time series model. Hence, he does not control for heterogeneity of both within and across banks. According to econometrician like Wooldridge (2004), pooled OLS model assume homogeneity of the population which is unrealistic most importantly the model often suffer from omission of variable bias.

In this study, therefore methodological issues and omitted variables by previous studies such as Estifanos, (2014) have been taken in to account. Accordingly, the effect of income diversification on performance of commercial banks in Ethiopia was investigated.

### **1.3 Objectives of the study**

#### **1.3.1 General objective**

The general objective of the study was to analyze the effect of income diversification on bank performance of commercial banks in Ethiopia.

#### **1.3.2 Specific objectives**

The specific objectives of this study are:

- To investigate the relationship between income diversification (non-interest income) sources and bank performance;
- To assess the tendencies of income diversification (non-interest income) of commercial banks in Ethiopia;
- To explore non-interest income source component of commercial banks in Ethiopia; and
- To assess the trends of past and current performance of commercial banks in Ethiopia.

### **1.4 Hypotheses of the study**

The purpose of this study is mainly focusing on to analyze the effect of income diversification on performance of commercial banks in Ethiopia. In order to analyze the impact of diversification, the following major hypotheses will be tested in case of Ethiopian commercial banks.

**H1:** There is positive significant relationship between diversification (Non-interest income) and Bank's performance.

**H2:** There is positive significant relationship between Loan and Bank performances.

**H3:** There is positive significant relationship between Exchange rate and Bank performances.

**H4:** There is negative significant relationship between Inflation rate and Bank performances.

**H5:** There is positive significant relationship between Equity and Bank performances.

**H6:** There is positive significant relationship between Total Asset and Bank performances.

## 1.5 Significance of the study

This study has some significance to investigate the effect of income diversification on banking performance for bank managers, regulators, investors and policy makers, because understanding whether income diversification can create value for banks or not is very decisive for the mentioned decision makers in banking sector. Generally, this study would be useful to scholars, regulators, shareholders, employees and managers.

- **To banks**, it provides some indication regarding with diversification to non-interest income
- **To the scholar**, the study would be a source of literature review and empirical reference which would provide grounds of further study to the scholar.
- **To bank Managers** , the study would provide some clues with regard to bank managers' risk taking behaviors.
- **To the employees**, the study would help them to assess the long term stability of the firm and their job security.
- **To the regulator**, National Bank of Ethiopia (NBE), to understand how better to mitigate the risks that engrossed the banking industry in Ethiopia. It would also provide a guide to remedial regulatory schemes and supervisory programme to support operations of financial institutions.
- **To the shareholders**, the study would assist to increase their knowledge on deciding whether to diversify or focus to boost their overall wealth.

## 1.6 Scope of the study

The study concentrated on the effect of income diversification on bank performance on all commercial banks in Ethiopia. According to Ethiopian national bank (NBE) report in 2019, currently, there are 16 private commercial banks and 1 government commercial bank is operating in the country. On the other hand, the study concentrates on diversification to non-interest income sources, not on other types of diversification. Further the study period covers only from 2014 up to 2018 Fiscal years. The researcher used only for five years data these is due to before 2014 the banking sectors competition and performance are weak and also the rationale behind choosing the lower limit of time frame of the data is due to the availability of



structured data as of the specific year. So ,to overcome data inconsistency problem, we began our dataset from 2014 and defined our sample period as 2014 – 2018 (5 years).

### **1.7 Limitation of the study**

During the study, the researcher faced some uncontrollable (external) factors that affected the smooth implementation of the research although the researcher tried his best to design the research as properly as possible. Moreover, lack of relevant and up to date published literatures mainly in the context of Ethiopia and absence of full information displayed on websites were the major constraints during the study.

### **1.8 Organization of the study**

The study was organized in five chapters as follows. The first chapter provides the general overview of the study. Chapter two reviews pertinent literature on the study from both theoretical and empirical issues reviewed in the literature and then attempt to link it to the study. Chapter three discusses the methodological issues of the study, while chapter four discusses the analysis of the empirical results and the final chapter, chapter five, includes conclusion and recommendations and at the end references and appendixes were attached.

# CHAPTER TWO

## 2. LITERATURE REVIEW

### 2.1 Theoretical literature review

In recent years, the shift from traditional activities to non-traditional activities (i.e. to non-interest income) is observable in banking industry all over the world. There are several reasons for this shift, David & Tuori (2000) stated that the most important technological development, regulatory environment (in particular deregulation and liberalization) or globalization. So, in this section the researcher was tried to give some issues which related to diversification.

### 2.2 What Diversification means

In finance, diversification means reducing risk by investing their assets in a variety of assets portfolio. If the asset values do not move up and down in perfect synchrony, a diversified portfolio will have less risk than the weighted average risk of its constituent. In general, the history of diversification dated back from a proverbial wisdom “Do not put all your eggs in one basket”. A review of the literature reveals that there is a great deal of variation in the way diversification is conceptualized, defined and measured.

Kamien and Schwartz (1975) stated that diversification as the extent to which firms classified in one industry produce goods classified in another. In all these early definitions, industry or market boundaries are assumed to be given. In contrast, Pitt and Hopkins (1982) used the word ‘business’ rather than industry, defining diversification as the extent to which firms operate in different business simultaneously.

However, recent attempts at defining diversification have shifted to the multidimensional nature of the diversification event. According to Booz, Allen and Hamilton (1985), defined diversification as a means of spreading the base of a business to achieve improved growth and or (a) reduce overall risk that includes all investment except those aimed directly supporting the competitiveness of existing business; (b) may take form of investments that address new products, services, customer segments, or geographic markets; and (c) may be accomplished by different methods including internal development, acquisitions, joint-ventures, licensing agreement. Diversification from a view of Ramanujam & Varadarajan (1989) is defined as the entry of a firm or business unit into new lines of activity, either by processes of internal business

development or acquisition. These definitions seem to capture the goals of diversification, its direction, and the means by which it is accomplished.

Related to banks, D'Souza and Lai (2004) indicated that diversification is particularly important for a bank, given its nature as a financial intermediary. The gaining from risk management in such financial firms will be enhanced to some extent. Moreover, some existing theories imply that increasing returns to scale linked to diversification. Banks acquire customer information during the process of making loans that can facilitate the efficient provision of other financial services, including the underwriting of securities. Likewise, securities and insurance underwriting, brokerage and mutual funds services, and other activities can produce information that improves loan making. In fact, diversification is not give guarantee of a reduced risk of failure or for better performance, D'Souza and Lai (2004). Rather it is just a tool that helps banks expanding their banking activities (business lines) and their regions (geographic lines).

### **2.2.1 Theories on Diversification**

Firms, including banks, often follow diversification for different motives including; the financial motive advanced in portfolio theory, the market power motive, the resource motive, the agency motive occasioned by managerial discretion, and the cost efficiency motive (Montgomery, 1994; Olo, 2009). Three theoretical perspectives that are particularly useful in explaining why firms pursue diversification are the Market power theory, the Agency theory and the Resource based view theory (Montgomery, 1994; Mulwa et al., 2015). According to Mulwa et al., (2015) the market power theory and the resource-based view theory are prescriptive and explain the motives of firm diversification based on profit maximization while Agency theory is managerial and emphasizes managerial choices and self-interest as a basis for diversification.

#### **2.2.1.1 Market Power theory**

The argument for market power theory is builds from Porter (1980) opinion of positioning the company in its environment using a set of strategies that distinguishes a firm's position among the competitors. Diversification is one of the strategies to overcome competition Barney, (1991) and enables a firm to build market power granting it access to conglomerate powers. Firms are able to gain competitive power in the market by entering other markets through diversification. This is not because of their particular position in that market but because of their positions in their individual markets (Gribbin, 1976). Firms have three ways by which

they can to yield market power through diversification: cross subsidization by using profits from one market to support destructive pricing in another; mutual tolerance of hard competition among competitors; and reciprocal buying among units of a multi-business firm which forecloses small competition (Montgomery, 1994; Palichet et al., 2000). By this approach, firms are able to overcome competition thereby earning profits above the average market profits. As such, market power theory hypothesis a positive relationship between diversification and firm performance.

### **2.2.1.2 Resource Based View theory**

The Resource Based View (RBV) theory is an action strategy to position a business unit as a foundation for a multi-business firm and emphasizes the firm's ability to exploit the potential synergies between resources to produce higher performance (Wernerfelt, 1984; Barney, 1991; Montgomery, 1994). RBV approach enlists the circumstances under which a firm's resources lead to high returns over longer periods of time using Porter's five competitive forces. It explains the resource-benefits accruing to a firm by envisaging the existence of resource position barriers where by the holders of a resource are able to maintain a sustainable competitive advantage in relation to other holders and third persons since possession of a resource by one party affects the costs and or revenues of later acquirers adversely. In such a case the holder can be said to enjoy the protection of a resource position barrier or a first mover advantage (Lieberman and Montgomery, 1988).As such, diversification based on RBV focuses on resource allocation and sharing competencies across different business lines to enhance performance by either cost reduction or by playing competitors out of the market as the absolute volume per period increases (Porter, 1980). This exploitation of potential synergies expected from sharing functions, resources and competencies lead to generation of sustainable competitive advantages and thus profitability occasioned by cost reduction. Therefore, the RBV predicts a positive impact of diversification on a firm's financial performance.

### **2.2.1.3. Agency Theory**

Agency theory hypothesizes the separation between the owners and managers of company create divergence of interests which ultimately increase the agency cost. According to Jensen and Meckling (1976), these costs refer to the aggregate of the agent incentive costs and monitoring costs incurred by the principals in limiting the deviation of interest, bonding costs incurred to deter the principals from taking interest diverging actions and the welfare reduction or residual loss incurred by the principal as a result of the divergence between the agents decisions and welfare maximizing decisions expected by the principals. The theory posits that

managers would often deploy corporate assets for their own selfish interests rather than the interest of the stock holders which problems are usually exacerbated by risk preference differentials between the agents and the principals (Jensen, 1986). Often, shareholders are more concerned about non-diversifiable risk while managers are more interested in the diversifiable risk which conflicts are more noticeable in companies with substantial free cash flows. This is so because the managers will choose to invest the excess cash flows to optimize profits and not to increase cash payments to shareholders and diversification is usually a convenient vehicle for this managerial behavior (Jensen and Meckling, 1976). Managers with free cash flows are likely to undertake value destroying or low benefit diversification to grow the size of their business territories, for managerial entrenchment or for reducing total firm risk which benefits their personal positions (Jensen, 1986). The consequences of these decisions anchor on agency costs because they can be viewed as managerial perquisites intended to decrease the risk associated with managerial human capital (Montgomery, 1994). agency theory emphasizes the benefits accruing to managers at the expense of the stock holders as a result of the manager's decisions. Accordingly, the view explains why managers pursue diversification and predicts a negative impact of diversification on firm performance (Mulwa et al., 2015).

### **2.2.2 What Non-Interest income means**

Non-Interest Income (NON), by (Robert, 2014) is in total operating income and is composed of fee, trading unclassified (non-fee & non-trading) income. In an effort of determining theoretical set up by analyzing bank concentration (in terms of size) against NON, (Fariborz 2011) has defined NON in a ratio which is defined as Net Non-Interest Income divided by gross Interest Income.

The components or sub-components of NON to specific activities of banks were presented as ATM facilities, money transfer, demand draft/pay orders, demand account, online bill/tax payments, online ticket booking, third party product, sale of insurance, sale of mutual funds, sale of gold coins etc. (EknathKundlik, 2012).

Stiroh (2002) classified non-interest income into a heterogeneous category that comprises many different activities, so it is broken down into four primary components:

- **Fiduciary income** is revenue related to the bank 's fiduciary operations, e.g., administering investments for others.

- **Service charges** include revenue directly related to deposit accounts like ATM or check usage fees.
- **Trading revenue** is primarily income from trading cash instruments, off-balance contracts, and mark-to-market changes in the carrying value of assets and liabilities.
- **Fees and other income** Include all other non-interest income items, such as service charges, commissions, and fees not reported elsewhere. This includes fees for safe deposit boxes, insurance sales, bank drafts, money orders, etc., bill collection, savings bond redemption, execution of acceptances and letters of credit, mortgage servicing fees, and notary, consulting or advisory services), periodic credit card fees, merchant credit card charges, rental fees, and loan commitment fees. Also included here are net gains on sales of real estate, loans, or premises, data processing services, and sales of other assets, as well as noninterest income on other foreign transactions.

Existing theories of financial intermediation imply increasing returns to scale linked to diversification. From a theoretical standpoint, the decision to diversify income sources is desirable for both efficiency and risk management. The joint production of a wide range of financial services should increase a bank's efficiency, banks to economies of scope (Klein and Saldenberg 1997). Thus, generally speaking, diversification across new types of services should enhance profitability. Experts of diversification argue also that lenders such as banks and finance companies are typically highly levered and diversification across sectors reduces their chance of costly financial distress.

### **2.3 Empirical literature review**

Diversification in banking can take on different dimensions. While there are a variety of studies that analyze diversification within loan portfolio, diversification of income sources, more specifically interest and non-interest income, has attracted increasing attention in academic research. Generally, it is believed that diversification of income sources should reduce total risk, as diversification should stabilize operating income if income streams are negatively or imperfectly correlated. So, this section was tried to present some empirical literature with related to diversification and bank performance.

De Young and Rice (2004) investigated the relationship between non-interest income and financial performance in the United States banking sector for the period of 1989 to 2001. They found that there is a negative relationship between non-interest income and risk-adjusted

financial performance of the U.S. banks. They show that well managed banks, measured by a relative ROE measure, are less engaged in non-interest income while large banks that focus more on relationship banking are more dependent on non-interest income. They also found that marginal increases in non-interest income cause higher, but more volatile profits, and a decline in risk-adjusted profits.

Craigwell and Maxwell (2006) also find there is a positive impact of non-interest income on ROA and its volatility for Barbados banks between 1985 and 2001. Smith (2003) likewise empirically confirms that European banks are able to seek diversification benefits through combining interest and non-interest income activities. In the case of European banks, the authors find that non-interest income is indeed more volatile than interest income but, in contrast to U.S. studies, there are negative correlations between these two income streams. Davis and Tuori (2000), also conclude that non-interest activities potentially stabilize bank earnings, for a number of European banks, including some in Germany.

Stiroh and Rumble (2006), Stiroh (2004b), Mercieca, (2007) and Chiorazzo, (2008) differentiate between a direct exposure effect (a greater reliance on non-interest activity) and an indirect diversification effect (change of concentration between the two income streams), whereby the latter is measured by the Herfindahl Hirschmann Index (HHI). Petersen (2004) complains that in the binary case, where the bank chooses between lending and non-interest activities, the HHI is merely a non-linear form of the non-interest income share. In particular, if the bank's noninterest income share is less than 50%, which is true for most of the small banks, the correlation between HHI and non-interest income share is extremely large and, hence, empirically separating these two effects might be impossible. Stiroh (2004a) looks at American community banks, i.e., small banks that do not belong to any banking group, and examines the link between income diversification and risk return performance for the 1984 to 2000 time periods. He performs a regression analysis and shows that, broadly speaking, the increase in fee-based revenues caused a worsening in the risk return trade-off. However, he points out that there are significant differences between small and medium sized community banks, and that the smaller banks are able to reach higher levels of competitiveness when they shift from interest-based activities towards fee based one. His paper also found that U.S. banking industry is steadily increasing its reliance on non-traditional business activities that generate fee income, trading revenue and other types of non-interest income.

By using 755 small banks dataset for the period of 1997 to 2003, Mercieca et al. (2007) examined the case of small European banks in terms of income diversification. They specifically investigated whether increased non-interest income activities could improve the performance of small European credit institutions or not. They found an inverse relationship between non-interest income and risk-adjusted bank performance. So, according to Mercieca et al. (2007), no direct benefit of diversification was found for small banks. Lepetit et al. (2008) looked at the same relationship for European banking industry from 1996 to 2002 and found a positive relationship between non-interest income and bank default risk. This means that the banks which have expanded into non-interest income activities have taken a higher level of risks as compared to the banks which are dealing in traditional activities.

In 2007, Baele et al. (2007) investigated whether income diversification could lead to a better performance/risk profile in European banks over the period of 1989 to 2004. Their finding discloses the existence of a positive relationship between income diversification and the market's anticipation on future bank profits. They also stated that diversification could decrease total risk for most banks, but banks with higher non-interest income portions had more systematic risk. They show that in fact banks with high proportions of non-interest income have higher market betas and therefore higher systematic risk.

However, Elsas et al. (2010) investigated effects of income diversification on both bank performance and market value by using a panel data of nine countries over 1996 to 2008 and find that diversification increases profitability and bank value.

Busch and Kick (2009) also analyzed the effects of fee-based income activities on risk-adjusted performance measures of German universal banks between 1995 and 2007. They empirically found that higher fee-based income could increase risk-adjusted returns of German universal banks. On the other hand, Sanya and Wolfe (2011) analyzed income diversification of banks in emerging countries. They found evidence that income diversification had a positive effect on risk-adjusted performance of emerging market banks.

Ali Osman Gürbüz et al. (2013) concludes that income diversification strongly increases the risk-adjusted financial performance of the Turkish deposit banks over the period of 2005 – 2011. That means increase in non-interest income leads to an increase in RAROA and RAROE. Depending on the results of their RAROA and RAROE models, they conclude that that Turkish deposit banks benefit from diversifying their activities beyond the traditional lending activities.



They also found that positive relationships between control variables (size, assets growth, crisis dummy variable, public ownership dummy variable) and risk-adjusted bank performance.

Smith (2003) analyzes the variability of interest and non-interest income and their correlation, for the banking systems of the 15 EU countries during the 1994–1998 periods. For each country, Smith (2003) considers commercial, savings, cooperative, and mortgage banks on the one hand and large and small banks on the other, and study the correlation of income sources. They find that in the majority of the cases, the increased reliance on activities that generate non-interest income has stabilized profits.

Damankah Basil Senyo et al. (2015), on the title of “Income Diversification and Financial Stability of Banks in Ghana” they found that non-interest revenue is becoming increasingly relevant and contributes to bank profit stability. The increasing reliance of banks in Ghana on non-traditional income however comes with volatility in their earnings. Banking sector supervisors and regulators not only be aware of the role a particular bank plays in each line of business, but must understand the risk management strategy of the whole banking organization in order to evaluate the risk exposures of a particular bank. Considering the diversity and complexity of banking operations in recent times, the Central Bank ought to continuously strengthen its controls by closely monitoring and assessing the increasing levels of risks assumed by banking companies and require the requisite capitals to protect the interest of all stakeholders in the industry.

Berger, A. et al. (2010), and others’ on the title “Does Diversification Increase or Decrease Bank Risk and Performance?, Evidence on Diversification and the Risk-Return Tradeoff” finds that performance tends to be non-monotonically related with diversification strategy, and the marginal effects of the focus indices on banks’ performance are also nonlinearly associated with the level of risk and foreign ownership. Specifically, they found that the banks tend to enjoy higher profits and lower risk when they move from a complete diversification strategy towards less diversification. However, the benefit of being less diversified tends to be negated when the extent of focus exceeds a certain threshold. Further, we find that the diversification strategy tends to have a stronger impact on performance when banks operate at higher risk level. As for the role of foreign ownership, our results suggest that there is a range of foreign ownership in which banks benefit most from being focused. When foreign ownership is very high or very low, banks tend to benefit more from being diversified.

Paul Rotich et al. (2011), on the title of “Income Source Diversification and Financial Performance of Commercial Banks in Kenya” found that there is statistically significant positive linear relationship between HHI level and financial performance measures (NOI, EBIT, ROA and ROE) and consistent with USA study’s findings Rumble, (2006) while contrast to European banks (Staikouras and Wood, 2003), hence income source diversification improves financial performance of commercial banks in Kenya. Larger banks have greater ability to diversify risk and should be safer in operation and thus have lower cost of funding than smaller ones. Hence, larger banks may have relatively better profitability than smaller ones. Based on too-big-to-fail argument, larger banks may take on riskier activity than smaller ones and decrease their cost of funding and may have developed risk management techniques or may be involved in fundamentally different types of activities with different distributions (McAllister and McManus, 1993).

In developing economy like Ethiopia, a financial sector is characterized by fragility, volatile interest rates, high-risk investment and inefficiencies in the intermediation process Shawn, (2002). This high-risk investment and inefficiencies of banking industry in developing countries will likely affect, negatively their performance. Empirical evidence from Sanya& Wolfe, (2011), underline that the usage of diversified income source by this sector will in part improve banking industry performance. Their finding on emerging economy countries showed that diversification across and within both interest and non-interest income generating activities decrease insolvency risk and enhance profitability.

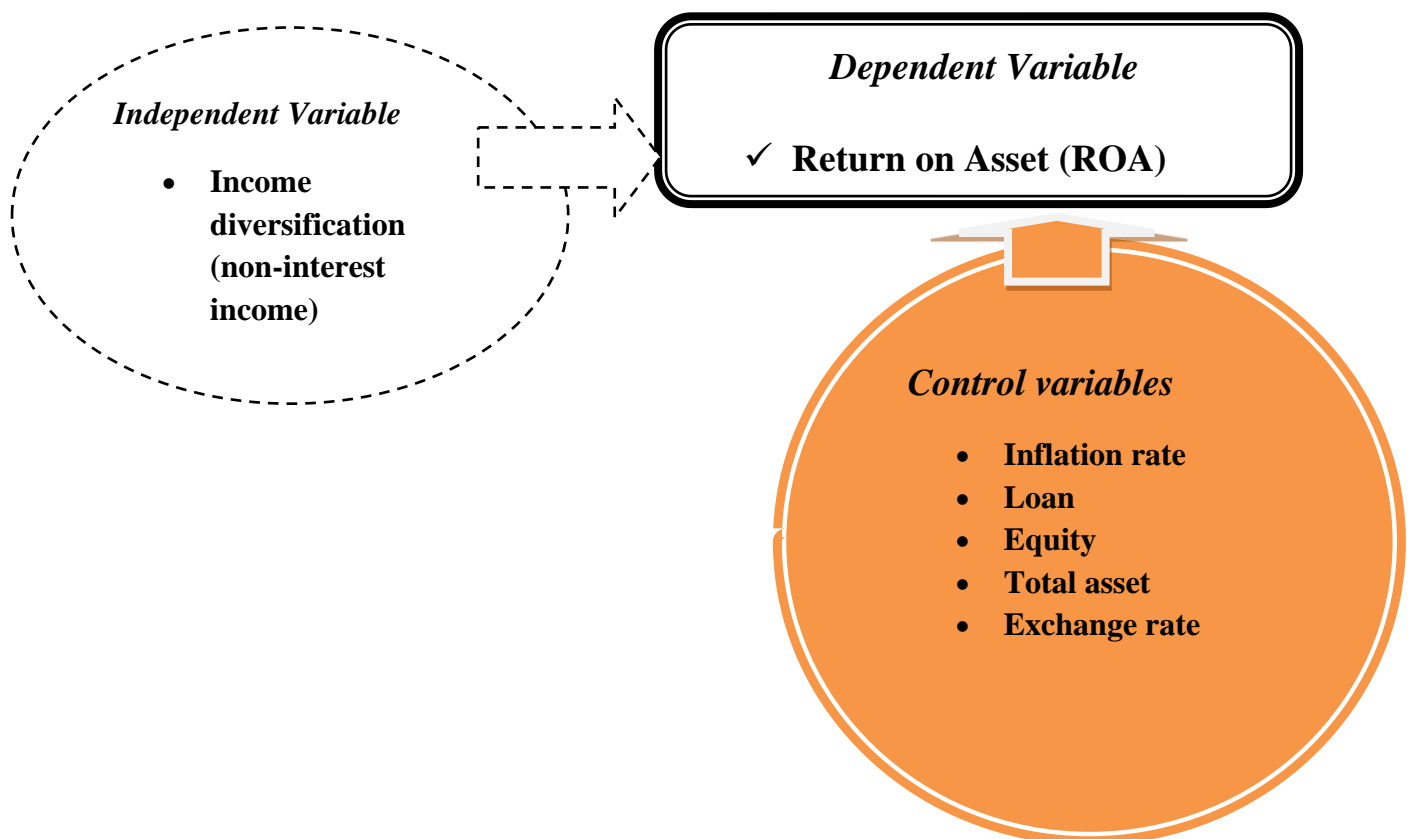
Previous studies showed mixed results about the relationship between income diversification and performance of banks and highlighted the importance income diversification in improving the bank’s profitability as well. considering the benefits of income diversification; this study aims to investigate the effect of income diversification on performance of commercial banks for the period of 2014-2018 in case of Ethiopia. The study is contributing in existing literature by providing guidelines for the banks how they can improve profitability through income diversification especially in case of a developing country like Ethiopia.

## **2.4 Conceptual Framework**

This conceptual framework describes the relationship between income diversification and bank performance. And as well as the relationship between the control variables like Total asset,

Inflation rate, Loan, Equity, and exchange rate with bank performance. This relationship described in the following diagram:

**Figure 2.1: Schematic Conceptual Framework**



## **CHAPTER THREE**

### **3. RESEARCH DESIGN AND METHODOLOGY**

This section discusses on the research hypothesis, approach and techniques adopted for the study with the aim of achieving the research objectives. The process of research usually entails problem identification, making hypothetical statements, collecting relevant data and then the data using the relevant and appropriate statistical tools. This section explains the research design and provides details regarding the population, data and sample size, definition of variables and measurements and data analysis methods. It also discusses about the model and the components of the model both the dependent and the independent as well as control variables.

#### **3.1 Research Design**

The research methodology begins by presenting the overall research design, as the research design provides an important framework and guidelines on how to collect and analyze data. The choice of appropriate research design will help the researcher to answer the research questions and to satisfy the research objectives. Therefore, it is a paramount to properly define and evaluate the research design before conducting the research.

According to Creswell (2009), there are three basic research approaches; these are quantitative, qualitative and mixed research approaches. The quantitative data research relies on the measurement and analysis of statistical data to produce quantifiable conclusions. Quantitative research is a means for testing objective theories by examining the relationship among variables. Therefore, for this study quantitative research approach is used to see the relationship between income diversification (non-interest income and performance of commercial banks in Ethiopia).

#### **3.2 Research Methodology**

In this chapter, the research methodology was developed to investigate the objective of this study. More specifically, comprehensive econometric model was adopted to measure the effect of income diversification on performance of commercial banks in Ethiopia.

### **3.3 Target Population**

The target population of the study was commercial banks in Ethiopia. According to the National Bank of Ethiopia (NBE) report in 2019, there were 16 private commercial banks and 1 government commercial bank operating in the country.

### **3.4 Data and sample size**

In this study, secondary source of data was used to investigate the objective of the study. Accordingly, a panel data that comprise annual financial report of 17 commercial banks at head office level for the year 2014-2018 were obtained from Ethiopian national bank. Those banks are Abay Bank S.C., Addis International Bank, Awash International Bank, Bank of Abyssinia, Berhan International Bank, Bunna International Bank, Commercial bank of Ethiopia, Cooperative Bank of Oromia(s.c.), Dashen Bank, Dehub Global Bank, Enat Bank, Lion International Bank, Nib International Bank, Oromia International Bank, United Bank, Wegagen Bank and Zemen Bank. The rationale behind choosing the lower limit of time frame of the data is due to the availability of structured data as of the specific year. Given the quantitative nature of the study, different documents, reports and other supportive materials were also used to give a clear picture of the finding of study.

### **3.5 Definition of variables and measurements**

The definitions of variables used in this study often are similar among financial empirical studies. Yet, there is no tenet on how they are measured. Different proxies were adopted from previous literatures to measure a set of variables used in the current study. These variations arise either due to the scope of methodology they adopted or due to lack of available data to choose proper proxy for the variable under question. Hence, in the subsequent section, proper measuring items for variables was discussed and selected in line with existing knowledge on the issue within the scope of the current study.

#### **3.5.1 Dependent variable**

There are different ways to measure profitability such as: return on asset (ROA), return on equity (ROE) and return on invested capital (ROIC). ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings whereas ROE measures a company's profitability which

reveals how much profit a company generates with the money shareholders have invested. ROIC is a measure used to assess company's efficiency in allocating the capital under its control in profitable investments. This measure gives a sense of how well a company is in using its money to generate returns. Comparing a company's ROIC with its weighted average cost of capital (WACC) reveals whether invested capital is used efficiently or not. There is criticism to make about Return on Equity (ROE) is that this performance measurement lacks attachment to risk, i.e. leverage, funding and liquidity profile. Other risk elements are also missing in the ROE figure, such as the quality of assets, the cost of risk, the risk concentration, and the solvency situation. ROE is definitely not a stand-alone performance measure and, at the very least, needs to be decomposed to establish where most of its changes come from and, eventually, to identify distortions over time. Indeed, as ROE may be artificially swelled by a worsening in solvency, it has to be linked to capital ratios. The recent crisis has shown how ROE failed to discriminate between the best performing banks and the others (in the sense of banks being able to generate sustainable profits) since, a quarter before the crisis, figures pointed to a great homogeneity in terms of banks' profitability (a high level of ROE). In some cases, the banks with the highest ROE were those worst hit by the crisis. Thus, ROE did not make it possible to identify the best performing banks in terms of sustainability of their results. ROE is a short-term indicator and must be interpreted as a snapshot of the current shape of institutions. So, for this study purpose the researcher used Return on Asset (ROA) as dependent variable this is due the fact that it is the best overall measure of the performance of a bank relative to its total asset.

### **3.5.2 Independent variable**

**Income diversification (non-interest income)** -In empirical literatures, Income diversification often measured either as the percentage share of the bank's income other than interest income to its total income or Herfindahl Hirschman index for Non-Interest Income is used. In the later case, income diversification is calculated as the sum of the square of the share of Fees and Commissions and the share of Other Income over Non-Interest Income. The index varies between 0.50 and 1.00. Value of 0.50 indicates complete diversification of Non-interest income in a bank, while value of 1.00 represents the lowest level of Non-interest income diversification. As Herfindahl Hirschman index of non-interest income rises, the bank becomes more concentrated and focused on one source of non-interest income and less diversified. Hence, the smaller the index, the more diversified the bank non-interest income. Empirical

studies that used, Herfindahl Hirschman index of non-interest income as a measure of income diversification includes Elsas et al. (2010), Sanya and Wolfe (2011), Stiroh and Rumble (2006), and Mercieca et al. (2007).

In the former case, the percentage share of the bank's income other than interest income over total income is used. It reflects how well the bank has diversified its source of income. Hence; the higher this percentage share it is, the better the bank is performing its activities in terms of income diversification. If this is the case, there will be a positive correlation between income diversification of the bank and its profitability (Mohana et al., 2012). Flamini *et al.* (2009), found positive relationship between income diversification and bank performance suggesting that banks which derived a higher proportion of their income from non interest sources tend to report a higher level of profitability level. In contrast, Tan *et al* (2012), Sufian *et al.* (2009) and Hassan *et al.* (2003) found negative relationship.

In this study, so as to measure income diversification, the percentage share of the bank's income other than interest income over total income was used rather than Herfindahl Hirschman index of non-interest income. Two reasons can explain for choosing the former measure of income diversification of banks. For one thing, Herfindahl Hirschman index, first measures and ranks banks with lower and higher concentration of diversified income and then measure how it varies with their profitability. Hence, this proxy only tells whether banks with higher or lower concentration income diversification are profitable. The other problem of this proxy is the fact that the measurement is not flexible as it is based on predetermined index. However, measuring income diversification as a percentage share of bank's non-interest income to its total income is straight forward. Most importantly, it reflects the impact of the variable of interest on profitability of each bank under question. Accordingly, it is calculated as follows:

$$\text{Income diversification} = \frac{\text{total income otherthan interst income}}{\text{total income}}$$

**H1:** There is positive significant relationship between diversification (Non-interest income) and Bank's performance.

### 3.5.3 Control variables

**Loan** -Variable is the Share of total loan to total asset. It is needless to emphasize that extending loans is one of the most important roles of commercial banks. The interest raised from the loans is the most important source of the commercial banks Income. However, inherent with bank 's loan is liquidity risk as well as credit risk. In this respect, in extending loans, banks should properly manage such risks. In general, it is expected that the more loans, the more interest income, and the more profitable the bank, Sastroswito and Suzuki (2011). Therefore, we can formulate a hypothesis as follows;

**H2:** There is positive significant relationship between Loan and Bank performances.

**Exchange rate:** The researcher was used this variable because of its direct relation with non-interest income. As per Estifanos Yilma (2014) exchange rate is the key factors which explain the performance in non-interest income. Hence, increasing of exchange rate leads to encourage banks 'earnings income from international trade activities. Therefore, we can formulate a hypothesis as follows;

**H3:** There is positive significant relationship between Exchange rate and Bank performances.

**Inflation rate:** is a macroeconomic factor which can affect banks performance. The increase in inflation may exert a negative influence on financial depth (Rousseau and Yilmazkuday,2009). It is because this increase may noticeably affect the ability for debt payment and then leads to low performance of credit allocation (Boyd et al.,2001). On the other hand, inflation increase can reduce saving, credit become scarcer (Moore, 1986; Azariadis and Simith, 1996). Therefore, we can formulate a hypothesis as follows;

**H4:** There is negative significant relationship between Inflation rate and Bank performances.

**Equity:** variable is the ratio of equity to total assets. This variable indicates the financial leverage degree of a bank. This variable is used in most of the recent studies in income diversification literature such as: Sanya and Wolfe (2011); - Chiorazzo et al. (2008); - Stiroh et al. (2004b), and Ali et al. (2013). Accordingly, a hypothesis has been framed which state that:



**H5:** There is positive significant relationship between Equity and Bank performances.

**Total asset:** is a natural logarithm of total assets. It assesses whether the size of the bank is related to performance. The impact of size on bank performance is strongly debated among researchers. In their study, Athanasoglou et al. (2005) and Kosmidou et al. (2006) shows the negative effect of bank size on performance. The authors point out that, the more a bank size is, the more difficult it is to manage. In contrast, Alkatib (2012); -Yadollahzadeh *et al.* (2013); -Weersainghe *et al.* (2013); - Sufian *et al.* (2009); - Hadad (2013), Masood *et al.* (2012) and Flamini et al. (2009) found a positive impact of bank size on performance. In their study they concluded that a large bank size reduces costs due to economies of scale that this entails, large banks can also raise capital at a lower cost. Therefore, we can formulate a hypothesis as follows;

**H6:** There is positive significant relationship between Total Asset and Bank performances.

### 3.6 Method of data analysis

In this research, econometric procedure underlining the panel data model has been employed to avert estimation problems that may otherwise generate biased and inefficient estimates. For instance, autocorrelation and heteroscedastic would be managed with robust standard error and different Pool ability test such as Conventional Housman test proposed by Wooldridge (2004) was also used. All the analyses were done with the help of *STATA 15.1*. Due to its flexibility and dynamic-ability for data manipulation, it is the most popular statistical tools among econometricians (A.colin Cameron and Pravin K.trivedi, 2009).

### 3.7 Model Specification

To start from simple model, the study assumes income diversification variables are exogenous and they are not correlated with unobserved performance of the banks, ‘Cov( $X_{it}$ ) = 0’; and there is no time and individual significant effect. Accordingly, the following variants are specified in pooled OLS (POLS) model as follow.

$$ROA_{it} = \beta_0 + \beta_1 loan_{it} + \beta_2 excl_{it} + \beta_3 inf_{it} + \beta_4 non_{it} + \beta_5 equity_{it} + \beta_6 logasset_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where,

$ROA_{it}$ : value of total operating income per total asset, in  $i$  bank at time  $t$ .

$\beta_1 loan_{it}$ : ratio loan to total asset,

$\beta_2 exch_{it}$ : value for exchange rate in ETB,

$\beta_3 inf_{it}$ : value for inflation rate,

$\beta_4 non_{it}$ : share of non-interest income per total income of bank;

$\beta_5 equity_{it}$ : ratio of bank equity per total asset.

$\beta_6 logasset_{it}$ : log of the value of total asset in ETB;

$\epsilon_{it}$ : is an error term, which is uncorrelated with explanatory variables.

Here, the very assumption of Pooled OLS model in equation (1) assume the homogeneity of the effect of time and individual fixed characters on performance of banks under question. However, there are unobserved factors known to banks but not to researcher that might affect banks performance. For instance, number of branches, and Banks managerial ability are of such factors that might affect banks performance. In this case, ignoring the influence of noises arise from the unobserved heterogeneity might leads to omission of unobservable variable bias in POLS estimation. One of the remedies for such problem is the usage of fixed effect estimator (FE) (Wooldridge, 2004).

Accordingly, that something within the individual may affect the previous POLS specification. FE model specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 loan_{it} + \beta_2 exch_{it} + \beta_3 inf_{it} + \beta_4 non_{it} + \beta_5 equity_{it} + \beta_6 logasset_{it} + a_i + u_{it} \dots \dots \dots (2)$$

Where,  $a_i$  is time invariant unobservable performance factors fixed effects and  $u_{it}$  is time variant idiosyncratic error term assumed to be exogenous  $E(u_{it}|x_{it}) = 0$ . FE model allows time-invariant unobserved performance factors,  $a_i$  to correlate with explanatory variables  $E(a_i|x_{it}) \neq 0$ . Thus, using FE model those time-invariant characteristics can be removed using differencing the model or can be controlled by adding dummy variable. Therefore, the net

impact of income diversification that vary over time can be captured if  $E(u_{it}|x_{it}) = 0$  in FE model.

Along with flexibility of showing how effect of variables changes over time, estimation in differenced model will wipe out individual fixed that result omission of variable bias in OLS estimation. Accordingly, differenced model in fixed effect specified as follows:

$$ROA_{it-1} = a_i + \beta_1 loan_{it-1} + \beta_2 exch_{it-1} + \beta_3 inf_{it-1} + \beta_4 non_{it-1} + \beta_5 equity_{it-1} + \beta_6 logasset_{it-1} + u_{it-1} \dots \dots \dots (3)$$

Estimation with fixed effect and differenced model cannot control unobserved fixed factors that do not change over time but affect performance of banks. Sex and race of employee, managers and other demographic factors of banks that often hardly change over time are of such factors. To account for this, random effect model is specified as follows

$$ROA_{it} = \beta_0 + \beta_1 loan_{it} + \beta_2 exch_{it} + \beta_3 inf_{it} + \beta_4 non_{it} + \beta_5 equity_{it} + \beta_6 logasset_{it} + a_i + u_{it} \dots \dots \dots (4)$$

## **CHAPTER FOUR**

### **4. PANEL DATA ANALYSIS AND EMPIRICAL RESULTS**

In this chapter, descriptive statistics, correlation analysis and OLS, fixed effect model (FE), differenced fixed effect (1<sup>ST</sup> Diff) and random effect model (RE) were employed to measure the question under the study. The first section deals with the descriptive statistics and summarizes the main features of the study variables in terms of mean, maximum, minimum and standard deviation. The second section deals with the correlation analysis and shows the degree of association between the studied variables. The third section of this chapter empirical results of OLS, fixed effect model (FE), differenced fixed effect (1<sup>ST</sup> Diff) and random effect model (RE) were employed to measure the question under the study.

#### **4.1 Panel data analysis**

##### **4.1.1 Descriptive statistics of the panel data set**

In this section the study presents the descriptive statistics of panel data set results for dependent variable Return on asset (roa), and the independent variable, non-interest income as share from the total income (non), and as well as control variables like, inflation rate (inf), loan ratio (loan), exchange rate (exch), total asset (logasset) and equity (equity) .

To this end, after all the aforementioned data specification the data set produced balanced panel of (17) individual banks with (85) observation item over five years (2014-2018). Detail of the final panel data set will be presented in the following section. Table (4.1) bellow depicts summary statistics for within and between variables in the final panel data set.

**Table 4.1 summary of statistics within and between variations**

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Variable		Mean	Std. Dev.	Min	Max	Observations
roa	overall	.0335655	.011623	.003167	.074415	N = 85
	between		.0062838	.0225389	.0444284	n = 17
	within		.0098736	.0071041	.0635521	T = 5
loan	overall	.5409412	.2602683	.28	1.81	N = 85
	between		.2569408	.364	1.516	n = 17
	within		.0697478	.3149412	.8349411	T = 5
exch	overall	22.29	3.013086	19.07	27.4	N = 85
	between		0	22.29	22.29	n = 17
	within		3.013086	19.07	27.4	T = 5
inf	overall	8.94	1.804637	7.2	12.1	N = 85
	between		0	8.94	8.94	n = 17
	within		1.804637	7.2	12.1	T = 5
non	overall	.3302118	.0910625	.12	.57	N = 85
	between		.0638433	.222	.446	n = 17
	within		.0664117	.1762118	.5442118	T = 5
equity	overall	.4136592	1.931434	.1	18	N = 85
	between		.8601921	.1088358	3.744	n = 17
	within		1.739466	-3.210341	14.66966	T = 5
logasset	overall	4.020809	.5924365	2.02458	5.68989	N = 85
	between		.5250738	3.208212	5.415714	n = 17
	within		.2973335	2.323677	4.634457	T = 5

**Source: STATA output results and author's computation 2020**

In order to measure the financial performance of Commercial Banks, ROA as a performance measure have been used in this study. As clearly indicated in the earlier chapters, ROA is a ratio of total asset to net operating income. In addition, return on asset measures the overall efficiency of management and it gives an idea how efficient the management is at using its assets to generate earnings. According to the analysis of descriptive statistic from table 4.1 above, the average value of return on asset for the sample Bank was 0.0335655 with a maximum and minimum value of 0.074415 and 0.003167, respectively. The standard deviation was 0.011623.

The mean value of profitability measured by ROA was on average 0.0335655. It means that, Ethiopian commercial banks generate on average 3.35655 percent from their total asset employed. The higher the value of return on assets indicated that firms are effective in generating profit from its asset employed and the management is efficiently utilizing its resources and the reverse is true for lower the value in return on assets. The standard deviation of return on asset (ROA) is 1.16 percent and it shows that the value of return on asset can vary both sides by 1.16 percent from the mean. Its minimum value is 0.3167 percent while the

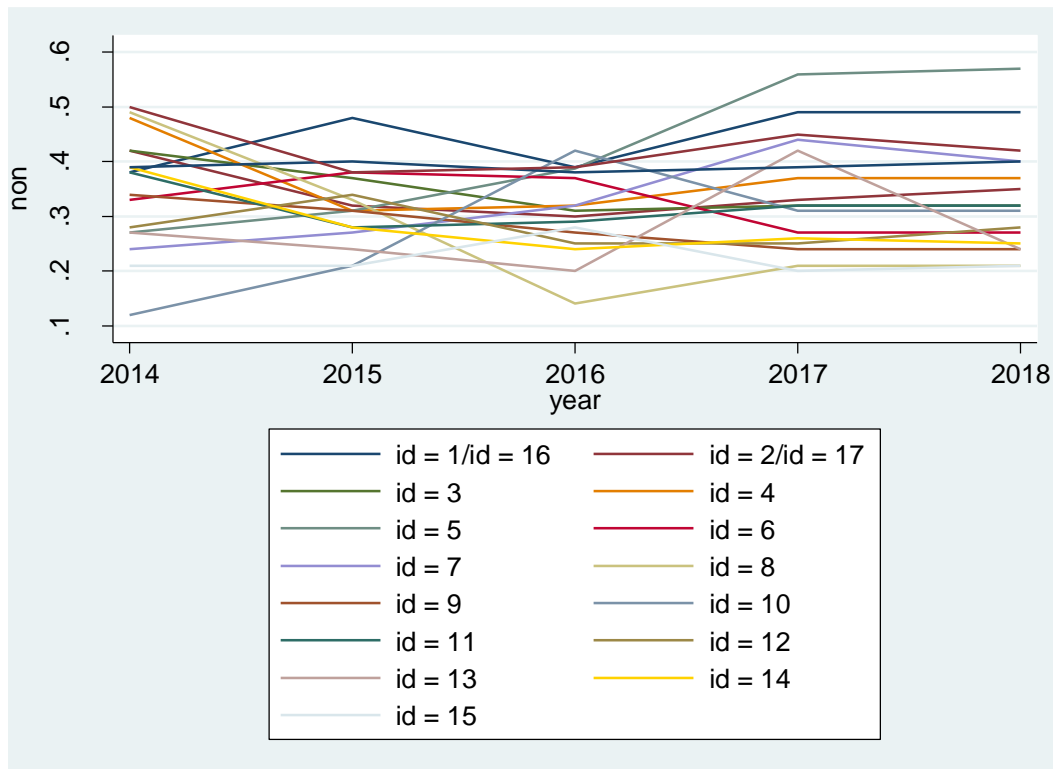
maximum is 7.4415 percent. This implies that, the presence of moderate variations among the values of profitability across banks included for this study.

Non-interest income as share from the total income (NON) is the independent variable which was considered in this study that affect the financial performance of commercial banks of Ethiopia with related to income diversification. According to the analysis of descriptive statistic from table 4.1 above the Mean value of NON variable on the sample (0.3302118) indicates that Ethiopian commercial banks are more concentrated on the interest income generating activities over the sample period. But this is not properly showing the commercial banks in Ethiopia are not diversifying their income.

The mean value shows that out of the total income generated by commercial banks around 33% was covered by Non- interest income. The maximum and minimum share of non- interest income in the sample period was 0.57 and 0.12 with a standard deviation of 0.0910625. This shows that out of the total bank income the highest portion was covered by interest income.

The mean value of equity on the sample period is 0.4136592. The maximum and minimum share of equity in the sample period is 18 and 0.1 with a standard deviation of 1.931434. The mean value of loan on the sample period is 0.5409412. The maximum and minimum share of loan in the sample period is 1.81 and 0.28 with a standard deviation of 0.2602683. The mean value exchange rate during the sample period is 22.29. The maximum and minimum amount of exchange rate during the sample period is 27.4 and 19.07 with a standard deviation of 3.013086. The mean value of total asset during the period is 4.020809. The maximum and minimum amount of total asset during the sample period is 5.68989 and 2.02458 with a standard deviation of 0.5924365. The mean value inflation rate during the sample period is 8.94. The maximum and minimum amount of inflation rate during the sample period is 12.1 and 7.2 with a standard deviation of 1.804637.

**Figure 4.1 distribution of Non-interest income across years**



**Source: STATA output results and author's computation 2020**

#### **4.1.2. Correlation Analysis**

As noted by Gujarati (2004), the correlation analysis is made to describe the strength of relationship or degree of linear association between two or more variables. The purpose of undertaking correlation analysis is to check whether there is multi-co linearity problem in the model and to indicate whether the variables move together or not in the same direction and the correlation coefficient indicates the strength of a linear relationship between two variables. In Pearson correlation matrix, the values of the correlation coefficient range between -1 and +1.

It is common in most studies making correlation analysis among variables before going to detail empirical results. A correlation coefficient close to either -1 or +1 indicates that there is strong inverse or direct relationship between variables respectively; whereas a correlation coefficient of zero indicates that the variables are uncorrelated. Correlation analysis is conducted in this section in order to analyze and examine the relationship between bank performance measurement i.e. ROA with non, loan, exch, inf, logasset and equity.

**Table 4.2: Test for Correlation between ROA, independent and control variables.**

Matrix of correlations							
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) roa	1.000						
(2) loan	-0.033	1.000					
(3) exch	0.450	0.173	1.000				
(4) inf	0.456	0.129	0.682	1.000			
(5) non	0.659	0.109	0.017	-0.038	1.000		
(6) equity	-0.117	0.001	0.051	-0.107	-0.141	1.000	
(7) logasset	0.165	0.159	0.206	0.080	0.070	0.065	1.000

**Source: STATA output results and author’s computation 2020.**

The correlation matrix table also shows the linear relationships between independent variable and each control variables with dependent variable. As indicated in the table 4.2 above, presents the result of the correlation analysis of bank performance measurement i.e. return on asset with non-interest income, loan, exchange rate, inflation rate, equity and total asset. Based on the STATA output non-interest income is positively correlated with return on asset (ROA) with correlation coefficient of 0.659. So, the positive correlation figure shows that when the independent variable (non-interest income) increase dependent variable also increased. In addition, the dependent variable, return on asset have a positive correlation with inflation, exchange rate and total asset 0.456,0.450 and 0.165 respectively. This shows that if the control variables (inflation rate, exchange rate and total asset) increases return on asset also increases. On the other hand, equity and loan are negatively correlated with return on asset (ROA) with correlation coefficient of -0.117 and -0.033 respectively. So, the negative correlation figure shows that when the control variables (equity and loan) increase ROA is decreased.

#### **4.1.3 Empirical results**


In this study, the objective is to measure the effect of diversification proxy as non-interest income on performance of commercial banks in Ethiopia. Accordingly, OLS, fixed effect model (FE), differenced fixed effect (1<sup>ST</sup> Diff) and random effect model (RE) were employed to measure the question under the study. The researcher account for issue of heteroscedastic, autocorrelation, omission of variable biases and other statistical issues that underline the panel



data estimation. table 4.3 below depicted estimated result for pooled OLS, FE, differenced fixed effect (1<sup>ST</sup> Diff) and RE model specification.

In the first hand pooled OLS regression result, the table revealed positive and significant association between bank performance and variable of interest non-interest income, which is a proxy for income diversification, at 1% significant level. Similarly, the coefficients for both inflation and exchange rate have showed positive and significant association with bank performance at 1% significant level. Whereas, the coefficient for loan have showed negative association with bank performance at 1% significant level.

**Table 4.3 Regression results on the effect of income diversification on performance of banks**

MODELS 	(RPOLS)	(FE)	(1 <sup>st</sup> Diff.)	(RE)
DEP.VAR	roa	roa	D.roa	roa
<b>Loan</b>	-0.00906*** (0.00122)	-0.00016 (0.00970)	0.01109 (0.01382)	-0.00836*** (0.00174)
<b>Exch</b>	0.00083*** (0.00028)	0.00064* (0.00032)	0.00306*** (0.00066)	0.00077*** (0.00025)
<b>Inf</b>	0.00229*** (0.00045)	0.00237*** (0.00033)	0.00175*** (0.00031)	0.00236*** (0.00034)
<b>Non</b>	0.08745*** (0.00899)	0.09876*** (0.01359)	0.05421*** (0.01342)	0.09473*** (0.01338)
<b>Equity</b>	0.00001 (0.00010)	0.00016*** (0.00005)	0.00018** (0.00008)	0.00014** (0.00006)
<b>Logasset</b>	0.00150 (0.00143)	0.00187 (0.00210)	0.00536* (0.00284)	0.00171 (0.00160)
<b>_cons</b>	-0.03544*** (0.00720)	-0.04197*** (0.00742)	-0.00507*** (0.00104)	-0.03851*** (0.00627)
<b>Obs.</b>	85	85	68	85
<b>R-squared</b>	0.729	0.798	0.771	z
<b>F</b>	53.850	105.075	3247.198	z
<b>chi2</b>	.z	.z	.z	396.383

*Note: Robust standard error is in parenthesis to control heteroscedasticity and autocorrelation.*

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### **Source: STATA output results and author's computation 2020**

However, the assumption of OLS that all banks are homogenies is unrealistic. For instance, skill of employee, management system, technology and other infrastructure are often different from one to one another among banks. Yet, these factors likely affect performance of banks. If this case, estimation with Pooled OLS might suffer from omission of variable bias.

FE model estimation can control and wipe out individual fixed effect that might otherwise affect bank performance. In FE specification, the coefficients for non-interest income have still shown positive significant association with bank performance at 1% significant level. Unlike, estimation with previous pooled OLS, the coefficient for bank equity become positive and significant association with bank performance at 1%. Likewise, the coefficients for inflation rate have still showed positive association with performance of commercial banks at 1% significant level. Whereas, the coefficient for exchange rate have become positive and significant but at 10% significance level.

In order to see how diversification of banks changes over time, the researcher employed differenced fixed effect estimation. Along with flexibility of showing how effect of variables changes over time, estimation in differenced model will wipe out individual fixed that result omission of variable bias in OLS estimation. In this specification, the coefficient for non-interest income have still shown positive significant association with bank performance at 1% significant level. Similarly, the coefficients for both inflation and exchange rate have showed positive and significant association with bank performance at 1% significant level. unlike to the estimation in previous OLS and FE base line models, the coefficient for total asset have shown positive and significant at 10% significance level.

Estimation with fixed effect and differenced model cannot control unobserved fixed factors that do not change over time but affect performance of banks. Sex and race of employee, managers and other demographic factors of banks that often hardly change over time are of such factors. In this case random effect model is a solution. Random effect model estimation measures "between variation" in the panel data analysis. In this model specification, the variables of interest income diversification (non-interest income) have still shown positive and significant association with bank performance at 1% significant level. So too, the coefficient

for bank equity have also showed positive and significant association with bank performance at 5% significant level. Whereas, the table revealed negative and significance relationship of loan with performance of banks at 1% significance level. Further, the coefficients for both inflation and exchange rate have still showed positive association with performance of commercial banks in Ethiopia at 1% significant level.

To this end, the robust result in table 4.3 above indicated the importance of income diversification in performance of commercial banks in Ethiopia. As it can be seen the variable of interest of income diversification, proxy by non-interest income coefficient, is persistently positive and highly significant in all estimated model. In base line fixed effect model, the interpretation holds that a 1% increase in income diversification of banks to be associated with 9.87 percentages rises with performance of commercial banks in Ethiopia. Similarly, 1% increase in income diversification of banks to be associated with 5.4 percentage rise with performance of commercial banks in Ethiopia in first differenced model. likewise, 1% increase in income diversification of banks to be associated with 9.47 percentage rise with performance of commercial banks in Ethiopia in random effect model.

#### **4.1.4 Discussion of the Empirical results**

In this study, diversification (non-interest income) was measured by the percentage share of the bank's income other than interest income over total income. The variable of interest of income diversification, proxy by non-interest income coefficient, is persistently positive and highly significant in all estimated model at 1% significance level. This shows that if there is a diversification among non-Interest income and return on asset could be increased and good. Therefore, non-interest income can be taken as one of the major determinant factors of affecting diversification on financial performances of commercial banks in Ethiopia. these finding are consistent with the findings of Flamini et al. (2009); - Senya and Wolf, (2011); - Craigwell and Maxwell (2006) and Smith (2003). Therefore, the study fails to reject the hypothesis saying, there is positive significant relationship between diversification (Non-interest income) and Bank's performance.

In all estimated models, the coefficients for exchange rate have showed positive and significant association with bank performance. This positive sign of the coefficient indicates as direct relationship between exchange rate and banks performance. These indicate that foreign trade is increases in the country. Hence, increasing of exchange rate leads to encourage banks earnings income from international trade activities. This result is consistent with Estifanos

Yilma (2014). As the international trade of the country increases, the demand for foreign exchange also increases. If the demand for foreign exchange increases, banks gain from foreign exchange transaction increases. This makes banks non-interest income raises. Therefore, the study fails to reject the hypothesis saying, there is positive significant relationship between exchange rate and Bank's performance. Further, the coefficient for inflation rates have showed positive association with performance of commercial banks in Ethiopia at 1% significant level.

In this study, equity was measured by the ratio of equity to total assets and indicates the financial leverage degree of a bank. In FE specification, the coefficients for bank equity become positive and significant association with bank performance at 1% significance level. but in differenced fixed effect model and random effect model estimation become positive and significant association with bank performance at 5% significance level. The proxy for total asset in this study is the natural logarithm of total asset. In differenced fixed effect model, the coefficients for total asset have showed positive association with bank performance at 10% significance level. Insignificant parameters indicate that the structures do not affect the financial performances of Ethiopian commercial banks and the variables is not the major effects of income diversification and financial performances of commercial banks and it is insignificant for the study.

In both pooled OLS regression and Random effect model estimation results, the coefficient for loan have showed negative association with bank performance at 1% significance level. This negative sign of the coefficient indicates an inverse relationship between bank loan and banks performance. This indicating that when the loan portfolio increase over the total assets of the Ethiopian commercial banks will decrease the return on asset. Therefore, the hypothesis stated; there is positive significant relationship between loan and Bank's performance should be rejected.

Generally, the finding is consistent with Resource Based View theory (RBV). This theory hypothesis that when a business unit as a foundation for a multi-business firm and emphasizes the firm's ability to exploit the potential synergies between resources to produce higher performance (Wernerfelt 1984; Barney 1991; Teece et al., 1997; Montgomery, 1994). This exploitation of potential synergies expected from sharing functions, resources and competencies lead to generation of sustainable competitive advantages and thus profitability occasioned by cost reduction. Therefore, the RBV predicts a positive impact of diversification

on a firm's financial performance. So, the finding is consistent with resource-based view theory.

However, this finding is contradicting with Agency theory. This theory emphasizes the benefits accruing to managers at the expense of the stock holders as a result of the manager's decisions. Accordingly, the view explains why managers pursue diversification and predicts a negative impact of diversification on firm performance (Mulwa et al., 2015). So, the researcher finding is contradict with Agency Theory.

## CHAPTER FIVE

### 5. CONCLUSIONS AND RECOMMENDATIONS

The basic intent of this chapter is to present the overall overviews of the research by summing the main findings of the analysis part and give future research directions. Accordingly, the chapter starts with its discussion by briefly sum up the overviews of the study and its main findings. In section two based on the study finding the researcher highlight some recommendations for the target populations the study pivoting on.

#### 5.1. Conclusion

This thesis examines the effect of income diversification on the performance of Ethiopian commercial banks by using the financial statements of seventeen commercial banks. The proxy (dependent variable) used to estimate performance is return on asset. The researcher used diversification (ratio of non-interest income) as independent variable. The researcher also checked the effects of some control variables like (total asset, equity, loan, exchange rate and inflation rate) on the relationship with bank performance. The study used 17 commercial banks (16 private and 1 public) from 2014 to 2018 year and used OLS, fixed effect model (FE), differenced fixed effect (1<sup>ST</sup> Diff) and random effect model (RE).

The findings that income diversification strongly increases return on asset of the Ethiopian commercial banks over the period of 2014 – 2018. The variable of interest of income diversification, proxy by non-interest income coefficient, is persistently positive and highly significant in all estimated model. So, there is relatively strong and significant relationship between the degree of income diversification (non-interest income) with return on asset. It means that Ethiopian Commercial banks benefit from diversifying their activities beyond the traditional lending activities. On the other hand, when banks increase the share of non-interest income over total income return on asset is increased. This is because on the regression result of non-interest income is positive and significant impact on return on asset.

The researcher also checked the effects of several control variables like equity and inflation rate on return on asset and loan, total asset and exchange rate with return on asset. The coefficient for both inflation and exchange rate have showed positive and significant association with bank performance. Furthermore, the coefficient for bank equity have showed positive and significant association with bank performance.

The findings also indicate that the degree of income diversification in Ethiopian commercial banks may not have reached its peak. On average the share of non-interest income in total income was about 33 percent during the sample period of 2014-2018.

The findings have one main implication for investors, regulatory body and bank managers that income diversification in Ethiopian commercial banks can create value for stakeholders. The positive effect of income diversification (non-interest income) on commercial banks performance may be a result of increased income of the bank or reduced operating costs of the bank from diversifying its operations.

## **5.2. Recommendation and Directions for Further research areas**

On the analysis part the researcher concludes that income diversification could increase the bank performance in term of return on asset. There are so many variables that may affect the bank performance proxies. But for this research purpose the researcher tries to analyze the effect of income diversification (non-interest income) on bank performance. So, based on the research conclusions above, the following recommendations were drawn.

- The finding of this thesis suggested that to improve bank performance banks should deepen efforts to consolidate the gains in both interest and non-interest income activities. in order to increase the bank performances commercial banks are advised to diversify their income across non-interest income and diversification can be blessing for all Ethiopian commercial banks if they use it wisely considering the right areas of diversification. Banks must consider their competencies and expertise while deciding the areas of income diversification to have true benefits of diversification.
- Exchange rate volatility has an important effect on performance of commercial banks. This shows that there is highly an import and export activity in the country. Business need foreign exchange to import raw materials and finished goods. Hence, they need different services from banks. Ethiopian commercial banks should provide international banking services to their customers.
- The study focused on banking sector only this excludes other financial institutions, and future studies should consider other sectors such as insurance firms and microfinance institutions. furthermore, the study considered only profitability measure as a proxy for bank performance, so future research should consider cost efficiency of non interest and interest income activities in Ethiopian banking sector.

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## Appendix

### Linear regression for pooled OLS model

roa	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
loan	-0.00906	0.00122	-3.35	0.001	-0.01445 -0.0037	***
exch	0.00083	0.00028	2.57	0.012	0.00018 0.00147	***
inf	0.00229	0.00045	4.29	0.000	0.00122 0.00335	***
non	0.08745	0.00889	11.37	0.000	0.07213 0.10276	***
equity	0.00001	0.00010	0.04	0.972	-0.00071 0.00074	
logasset	0.00150	0.00143	1.25	0.214	-0.00088 0.00388	
Constant	-0.03544	0.00720	-5.32	0.000	-0.04871 -0.02217	***
Mean dependent var		0.031	SD dependent var		0.009	
R-squared		0.729	Number of obs		85.000	
F-test		53.850	Prob > F		0.000	

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### Regression results for Fixed Effect model

roa	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
loan	-0.00016	0.00970	-0.02	0.987	-0.02073 0.02040	
exch	0.00064	0.00032	1.98	0.066	-0.00004 0.00132	*
inf	0.00237	0.00033	7.15	0.000	0.00166 0.00307	***
non	0.09876	0.01359	7.26	0.000	0.06993 0.12757	***
equity	0.00016	0.00005	3.26	0.005	0.00005 0.00027	***
logasset	0.00187	0.00210	0.89	0.338	-0.00259 0.00632	
Constant	-0.04197	0.00742	-5.66	0.000	-0.05770 -0.02624	***
Mean dependent var		0.031	SD dependent var		0.009	
R-squared		0.798	Number of obs		85.000	
F-test		105.075	Prob > F		0.000	

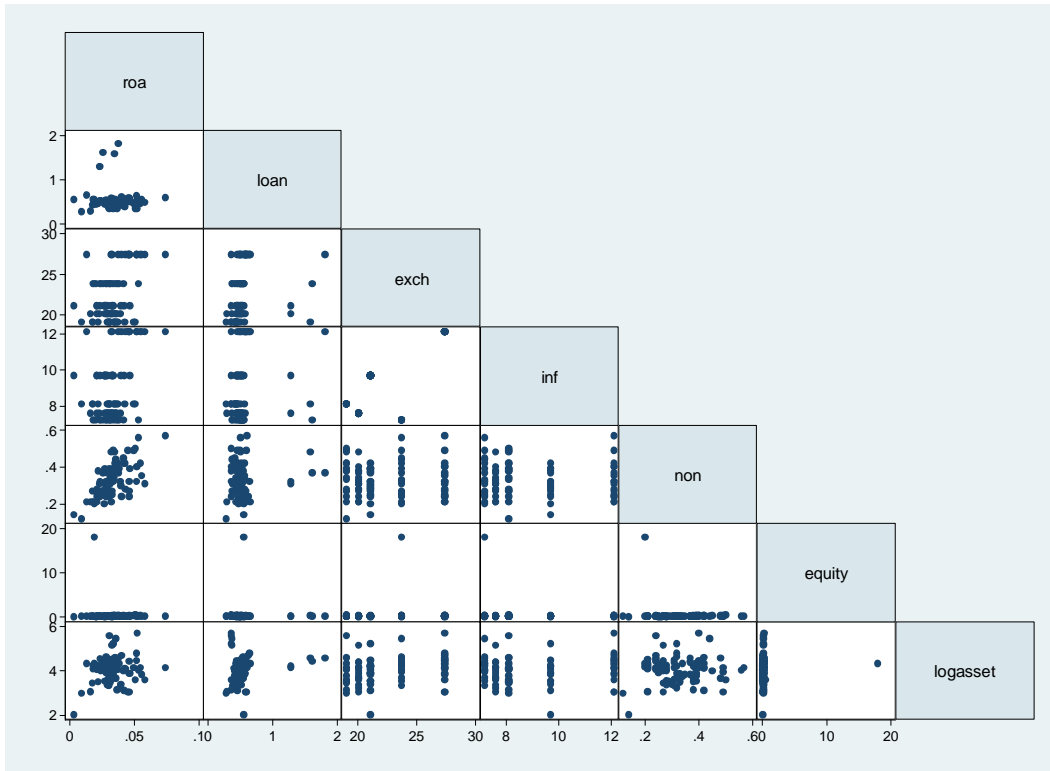
\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### Regression results for Random Effect model

roa	Coef.	St.Err.	z-value	p>(z)	[95% Conf Interval]	Sig
loan	-0.00836	0.00174	-4.79	0.000	-0.0117 -0.004	***
exch	0.00077	0.00025	3.06	0.002	0.0002 0.001	***
inf	0.00236	0.00034	7.05	0.000	0.0017 0.003	***
non	0.09473	0.01338	7.08	0.000	0.0685 0.120	***
equity	0.00014	0.00006	2.41	0.016	0.0000 0.000	**
logasset	0.00171	0.00160	1.07	0.286	-0.0014 0.004	
Constant	-0.03851	0.00627	-6.14	0.000	-0.0507 -0.026	***
Mean dependent var		0.031	SD dependent var		0.009	
Overall r-squared		0.727	Number of obs		85.000	
Chi-square		396.383	Prob > chi2		0.000	
R-squared within		0.795	R-squared between		0.584	

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

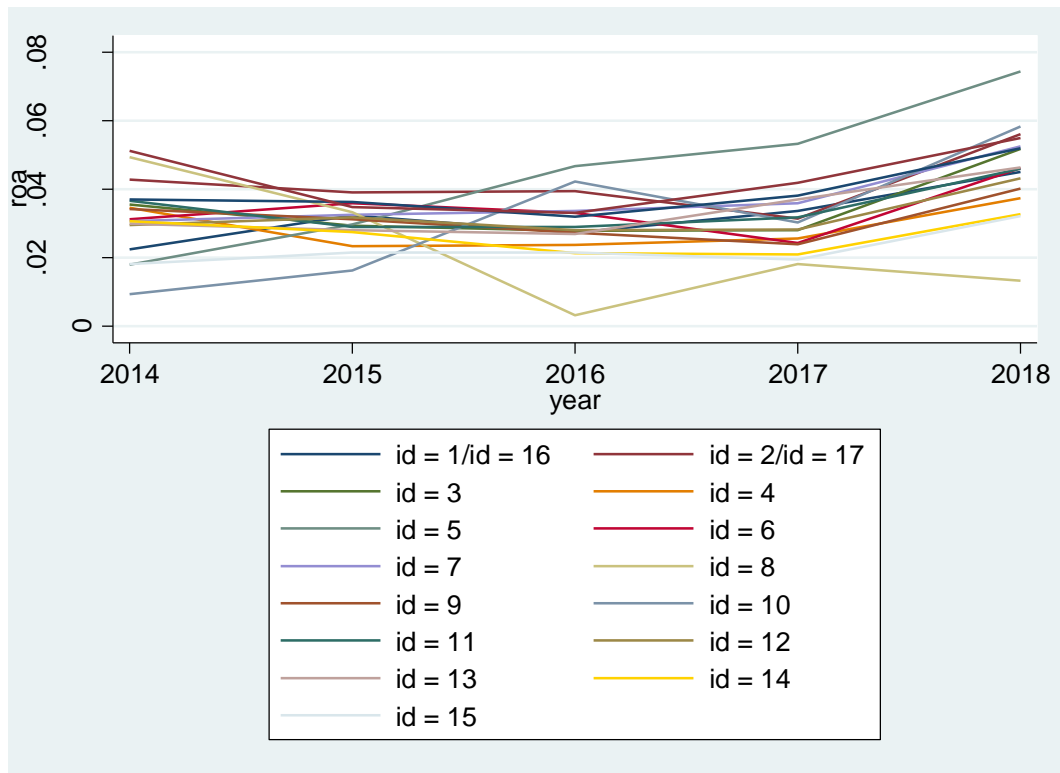
**Correlation between ROA, independent and control variables.**



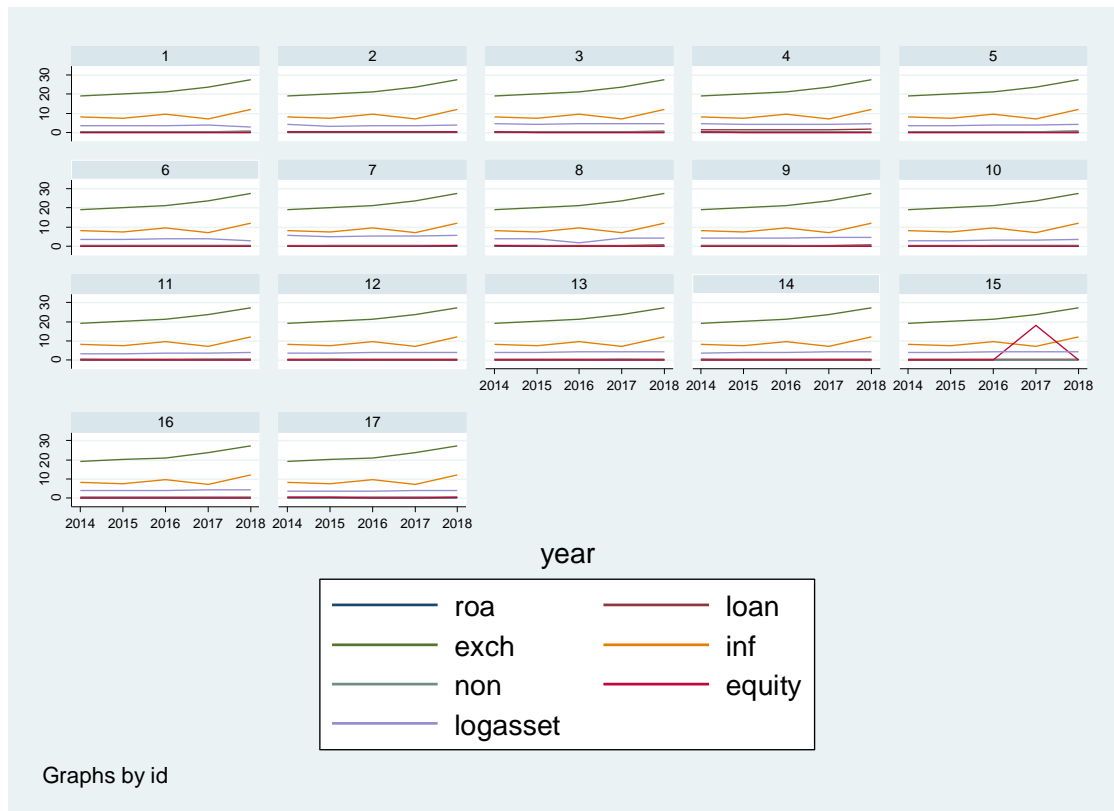
**Shapiro-Wilk W test for normal data**

Variables	Obs	W	V	z	Prob>z
roa	85	0.97067	2.116	1.648	0.04966
loan	85	0.5206	34.193	7.765	0.00000
exch	85	0.92197	5.630	3.799	0.00007
inf	85	0.88198	8.515	4.709	0.00000
non	85	0.98553	1.044	0.095	0.46212
equity	85	0.10467	64.598	9.164	0.00000
logasset	85	0.96866	2.261	1.794	0.03642

### Distribution of ROA across years.



### Distribution of all variables across years



### Breusch and Pagan Lagrangian multiplier test

$$\text{roa}[\text{code},t] = Xb + u[\text{code}] + e[\text{code},t]$$

Estimated results:

	Var	sd = sqrt(Var)
roa	.0001351	.011623
e	.0000267	.0051656
u	.0000145	.0038133

Test:  $\text{Var}(u) = 0$

$$\text{chibar2}(01) = 14.59$$

$$\text{Prob} > \text{chibar2} = 0.0001$$

### List of Commercial Banks in Ethiopia

No.	Bank Name	Year of Establishment	Ownership
1	Commercial Bank of Ethiopia	1963	Public
2	Awash International Bank	1994	Private
3	Dashen Bank	1995	Private
4	Bank of Abyssinia	1996	Private
5	Wegagen Bank	1997	Private
6	United Bank	1998	Private
7	NIB International Bank	1999	Private
8	Cooperative Bank of Oromia	2004	Private
9	Lion International Bank	2006	Private
10	Oromia International Bank	2008	Private
11	Zemen Bank	2008	Private
12	Bunna International Bank	2009	Private
13	Birhan International Bank	2009	Private
14	Abbay Bank	2010	Private
15	Addis International Bank	2011	Private
16	Debube Global Bank	2012	Private
17	Enat Bank	2013	Private