

Addis Ababa University
College of business and economics
Department of Accounting and Finance
Graduate program of MBA in finance

DETERMINANTS OF NON-INTEREST INCOME IN
ETHIOPIAN COMMERCIAL BANKS

BY ESTIFANOS YILMA

A Thesis Submitted to
The Department of Accounting and finance

Presented in Partial Fulfillment of the Requirement for the Degree
of Masters of Business Administration in Finance

Submitted to: Abebe Y. (Assistant Professor)

Addis Ababa

June, 2014

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Declaration

I, the undersigned, declare that this study titled “Determinants of Non-interest Income in Ethiopian Commercial Banks” is my original work and has not been presented for a degree in any other university in the country, and that all sources of materials used for the study have been accordingly acknowledged.

Declared by:

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Date _____

LETTER OF CERTIFICATION

This is to certify that Estifanos Yilma has carried out his thesis work on the topic of ~~“~~Determinants of Non-interest Income in Ethiopian Commercial Banks” under my supervision. This work is original in its nature and it is suitable for Submission in partial fulfillment of the requirement for the award of Master’s Degree in Business Administration (MBA) specialization in finance.

Advisor: Abebe Yitayew (Ass. professor)

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This is to certify that the thesis prepared by Estifanos Yilma, entitled:
Determinants of Non-interest income in Ethiopian Commercial Banks and
submitted in Partial Fulfillment of the Requirement for master of Business
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Abstract

Determinants of Non-interest Income in Ethiopian Commercial Banks

Estifanos Yilma

Addis Ababa University, 2014

This study focused on the determinants of non-interest income in the case of Ethiopian commercial banks. The trend of non-interest income of commercial banks in Ethiopia is varying from time to time. The data for this study were collected from financial statements of the sample commercial banks and annual reports of National Bank of Ethiopian, Ministry of Finance and Economic Development (MoFED) and Central Statistics Agency (CSA). Eight commercial banks were used as the sample for this study which was established before 2003 G.C. After the data collected, it was analyzed using multiple linear regression and ordinary least square estimation method. The finding of the study is 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. The researcher recommends that, banks should keep their efficiency up, participate on different innovative, marketing and focusing on foreign exchange trade so as to enhance their level of non-interest income.

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ACRONYM

Acronym	Full name
AIB	Awash International Bank
ATM	Automatic Teller Machine
BOA	Bank of Abyssinya
CBB	Construction and business bank
CBE	Commercial Bank of Ethiopia
CLRM	Classical Linear Regression Model
CSAA	Central Statistics Authority Agency
DB	Dashen Bank
HHI	Herfindahl-Hirschman Index
MoFED development	Ministry of Finance and Economic
NIB	Nib International Bank
NII	Non interest income
NIIRATIO	Non-interest income ratio
OLS	Ordinary Least Square
RELROA	Relative performance (return on asset)
UB	United Bank
WB	Wegagen Bank

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Over the last three decades, the financial industry in developed as well as in developing countries has experienced major changes. Deregulation and increased competition has led banks to expand their activities and to develop new lines of businesses beside their traditional interest activities. Banks have diversified their income sources by performing new activities, such as underwriting and trading securities, brokerage and investment banking and other activities, which generate non-interest income, (Celine, and et al, 2013).

The profitability of traditional banking activities such as business lending and raising deposits has diminished in recent years. As a result, banks have increasingly turned to new, non-traditional financial activities as a way of maintaining their position as financial intermediaries. Over the last years, numerous banks around the world have broadened their portfolio to offer non-traditional services. For instance, as Clark and Siems (2002) as cited on A.Lozano & F. Pasiouras (2008) mention, off-balance sheet (OBS) activities such as loan origination, securitization, standby letters of credit, and derivative securities among others are expanding in a rapid pace. As a result, the share of fee-based and other non-interest income to total income has increased dramatically.

Non-interest incomes have become an increasingly important part of banks' operating incomes.

Most banks regard non-interest incomes as one of the stable sources of bank revenues. In general, the industry believes increasing the ratio of non-interest incomes to operating incomes can not only improve profitability but also reduce the risk to the bank (L.W. Huang and Y.K.Chen, 2006).

Non-interest income arises from activities such as income from trading foreign exchange and securitization, investment banking and advisory fees, brokerage commissions, venture capital, and fiduciary income, and gains on non-hedging derivatives. These activities are different from the traditional deposit taking and lending functions of banks.

According to L.W.Huang and Y.K.Chen (2006), there are three paths making non-traditional activities grow. They are: improvements in technology, innovation of financial products, and deregulation. Since the 1980s, because of the three above paths, incomes from the non-traditional activities, which are classified as non-interest incomes, have played a more important role in operating incomes. Banks rely on not only the incomes from the traditional lending, but also on various fees from non-traditional activities. The ratio of non-interest incomes to operating incomes has increased over the years, L.W.Huang and Y.K.Chen (2006). Some studies are done regarding with the issues of non-interest income, and a very few of them are on determinants of non-interest income in the case of some developed countries. For instance, S. Karlos (2009), De Young and Rice (2004), L. Huang and Y. Chen (2006), Kevin J. Stiroh (2002), and R. Craigwell and C. Maxwell (2005) are some researchers who did their studies on the issues of non-interest income.

My motivation to focus on this study is that from two perspectives; according to L.W.Huang and Y.K.Chen (2006), the percentages of non-interest income over the total income is become increases. The second reason is that, when we see the annual reports of different commercial banks in Ethiopia, it reveals that they have a volatility of income from the side of non-interest income. In some years some banks generate above 50% of their income from non-interest income and others below 50%, even it below 30% of total income, Annual reports of Ethiopian commercial banks (starting 2003 to 2013, see page 5). These are the reasons that motivated me to focus on the title of “determinants of non-interest income” the case of Ethiopian banks.

1.2 Statement of problem

The traditional role of commercial banks has centered on intermediation and the generation of net-interest income through two core activities; namely, the collection of deposits on which banks pay interest and the issuing of loans for which they receive interest income. Over the years, however, commercial banks have gradually expanded beyond their traditional role and sources of income to encompass more activities that generate non-interest income. This was come with the advances of communications and technologies of the world. Due to the country's monetary police and economic condition banks' spread from traditional activities may be small. At this time non-interest activities can cover banks' expenditure. When banks' diversify their source of income, they can create additional employment opportunities. Not only these, delivering non-interest income type of activities is the way to satisfy customers by rendering better and quick service, for instance ATM. In addition to the above because of increase in non-interest income, the profit of banks' also increases. This increase in profit benefits to the government in the form of taxes and contribution to the nation GDP in the service sector.

Before 10 years there were only nine banks in Ethiopia. Recently the number of banks in the country reached to 19. As the number of banks increases, the competition between them also increases. In order to survive the competition, banks might need to increase the sources of income to maintain profitability.

Table-1 comparison of interest and non-interest income of eight commercial banks from 2007 up to 2012 (in millions)

	2012			2011			2010			2009			2008			2007		
	Interest income	Non- interest income	NII %	Interest income	Non- interest income	NII %	Interest income	Non- interest income	NII %	Interest income	Non- interest income	NII %	Interest income	Non- interest income	NII %	Interest income	Non- interest income	NII %
CBE	6703	4870	42	4082	2913	41	2743	1751	39	2358	1490	38	1541	1431	48	1036	1217	54
Dashen	898	827	48	604	679	52	483	482	50	435	321	42	420	250	37	320	165	34
AIB	669	442	39	395	533	57	303	383	56	276	201	42	251	172	40	215	129	37
United	519	313	37	339	292	46	251	260	51	210	135	39	171	109	39	122	70	36
CBB				171	144	45	161	105	39	135	92	40	137	83	37	121	97	44
Wegagen	442	128	23	315	256	45	247	318	56	234	239	50	238	192	45	185	135	42
NIB	434	326	42	333	324	49	266	290	52	254	172	40	210	107	34	147	61	29
BoA	497.5	226	31	372	246	40	262	207	44	276	129	32	253	95	27	202	65	24

As it shown in the above table, it reveals that non-interest income is varying from bank to bank and again, with the same bank, it varies from year to year. Some banks get more income from non-interest income while others earn very low amount of non-interest income. Generally it cannot be predictable from year to year. It was fluctuating with all over the sample period. Therefore, the researcher insisted to investigate factors that could be determinants of non-interest income of Ethiopian commercial banks.

The study made by DeYoung R. and Rice T. (2003) tried to relate non-interest income with bank characteristics, technological developments, and macro-economic factors by incorporate different variables. These variables are:- relative performance (RELROA), core deposits, loan, consumer loan, real estate loan, commercial and industrial loan, ATM, loan quality, income diversification, credit card banking, full time employees, size of asset and job growth. However, under the present circumstances in our country, there is a need to make changes to these factors. While a number of studies addressed various issues relating to commercial banks in Ethiopia, to the researcher knowledge none of these specifically focus on the determinants of Non-interest income in Ethiopian commercial banks. Hence, the importance of this research is to examine the main determinants of non-interest income in Ethiopian commercial banks during the period of 2003/4 to 2012/13. It is an important research area that needs to be studied so as to know the past trend of non-interest income and its determinants. This study, therefore, seeks to fill the gap by investigating the factors that could have influence on the non-interest income.

1.3 Objective of the study

The general aim of this study is to investigate factors that could affect the non-interest income of commercial banks in Ethiopia and understand the way how banks raise their income from non-interest income.

More specifically this study aims;

- ✓ To analysis the effect of banks' non-interest income on their volume of total income
- ✓ To identify the most significant factor to increase non-interest income of commercial banks
- ✓ To show the ways for commercial banks so as to improve their non-interest income.

1.4 Research questions

The following are research questions that will be addressed in this study.

- What factors are determining the non-interest income?
- Which factors are the most useful so as to increase non-interest income of the bank?
- How Ethiopian commercial banks could increase the share of their non-interest income?

1.4 Significance of the study

The study has some significance to different stakeholders. For banks, it provides some clues regarding with their non-interest income. How to increase it and what factors could affect it? Such issues will explain with the help of this study. It also fills the gap of literature in the area of determinants of non-interest income in Ethiopian commercial banks. Lastly it could be the basis for other researchers who are insisting to do further study in the area.

1.5 Scope of the study

The study delimited on the determinants of non-interest income of the country's eight commercial banks, i.e. it was focused on Ethiopian commercial banks. These banks are Commercial bank of Ethiopia, Construction and Business Bank, Dashen Bank, Awash International Bank, Bank of Abyssinia, United Bank, Nib International Bank and Wegagen Bank. The study period will cover from 2003/4 to 2012/13 of Gregorian calendar.

1.6 Limitation of the study

While doing this study there was some limitations which are hinder for the effectiveness of the study. These are;

- ✓ Unavailability of literatures, since the study is new for the country

CHAPTER TWO

Related Literatures

2.1 Theoretical Literatures

2.1.1 Non-Interest Income

Non-interest income refers to all the income of a commercial bank other than the interest income. Stiroh (2002) classified noninterest income into a heterogeneous category that comprises many different activities, so it is broken down into four primary components – fiduciary income, service charges, trading revenue, and fees and other income. 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 fees, e.g., loan commitment fees, safe deposit boxes, commissions, and land rental fees.

Economic forces have led to financial innovations that have increased competition in financial markets. As such, the traditional business of banking is on the decline globally. Greater competition has diminished the cost advantage banks have had in acquiring funds and has undercut their position in loan markets. This scenario has encouraged banks to diversify into new activities that bring higher return.

As non-interest income trended up during the 1990s in the US economy, it was believed that shifting banks' income away from intermediation-based activities (in which bank income was subject to credit risk and interest rate risk) and toward fee-based financial products and services would reduce income volatility. It was conventionally believed that expansion of banks' activities into new fee-based products and services reduced earnings volatility, via, diversification effects. However non-interest income coexists with, rather than replaces interest income from the intermediation activities that continue to remain banks' core financial services function [DeYoung and Rice 2003 as cited in A. S. Ramasastrri and et al].

According to A. S. Ramasastrri and et al some studies indicate that fee-based income stabilizes profitability. Expansion of banks' activities reduces risk, with the main risk reduction gains arising from insurance rather than securities activities [Saunders and Walters 1994 as cited in A. S. Ramasastrri and et al]. Some other studies suggest that non-interest income need not be more stable than income from traditional banking activities, due to the following three reasons: (i) Revenue from a bank's traditional lending activities is likely to be relatively stable overtime, because switching an information cost makes it costly for either borrower or lender to walk away from a lending relationship. However, revenue from fee-based activities may fluctuate from period to period because it may be easier to switch from bank to bank for many of the new fee-based activities than for traditional banking. (ii) Expanding fee-based services can require substantial additions to fixed cost, which increase the operational leverage of the bank. Once a lending relationship is established, the only cost of an additional loan is the interest expense while the same does not apply for non-interest income where additional staff may be required.

(iii) Capital is not required for many fee-based activities. This suggests a higher degree of financial leverage; hence earnings volatility may increase [De Young and Roland 1999 as cited in A. S. Ramasastrri and et al].

In a study on the variability of interest and non-interest income and their correlation for the banking systems of EU countries for the years 1994-98, it was found that the increased importance of non-interest income did, for most, but not all categories of banks, stabilize profits. It was not, however, invariably more stable than interest income [Smith et al 2003 as cited in A. S. Ramasastrri and et al]. Yet other studies have suggested that the banking industry is not actually declining in any meaningful economic sense; rather, the nature of its intermediation activity is changing [Kaufman and Mote 1994 as cited in A. S. Ramasastrri and et al].

The primary source of a bank's earnings is derived from intermediation activities. This is the typical lending relationship where a bank accepts funds from the public, compensates them with a rate on their deposits, and reinvests the money for a higher return. This is known as interest income. Noninterest income, or fee income, refers to the earnings of the bank that are not directly related to interest activities. Examples of noninterest income include service charges on deposit accounts, fiduciary income, and servicing fees. According to DeYoung & Rice (2004) the former are considered traditional noninterest income components because banks have earned revenues from these sources for many years.

Non-traditional noninterest activities, as the term implies, includes fee income that banks have only recently begun to collect. Venture capital, securitization, and trading are some of the non-traditional noninterest activities that the banking industry has explored in recent

years. Two of the more important non-traditional non-interest income components for banks today are insurance and investment banking. In terms of the diversification; banks should not focus highly on an income source. Although interest incomes from traditional activities, such as making different loans, are the major generator of revenues, diversifying income sources from traditional activities to non-traditional activities might be a good strategy for banks. Yet, banks should implement this strategy with caution. Placing emphasis on nontraditional activities and giving up traditional activities might not be a sound strategy, L. W. Huang, Y. K. Chen (2006). DeYoung and Rice (2004) as cited in L. W. Huang, Y. K. Chen, indicated some non-traditional activities of banks which were related to traditional activities. Banks cannot improve profitability by giving up traditional activities and increasing non-traditional activities.

Banks earn a profit from the financial flows fundamental to the intermediation process (e.g., interest paid on deposits, interest received from loans and securities, and the resulting net interest margins) but the nature of these flows exposes the bank to risk. Some of these risks are associated solely or primarily with items on just one side of the balance sheet and are independent of items on the other side of the balance sheet, e.g., credit risk is associated primarily with loans, while market risk is associated primarily with investments in long-term fixed income securities. This independence suggests that a substantial amount of the risk inherent in banking is unrelated to the intermediation process. In contrast, *interest rate risk* is associated with the interaction of items on the right-hand side (e.g., the maturities of various loans and securities) and left-hand side (e.g., the maturities of various deposit accounts) of a bank's balance sheet, and as such is a direct outgrowth of the intermediation process. Thus, the value of a traditional

commercial banking company will depend systematically on its financing decisions, even in a world without taxes or other frictions absent from the simplest Modigliani and Miller (1958) framework; Robert DeYoung and Chiwon Yom (2008).

The degree to which commercial banking companies rely on the traditional intermediation business model has declined over time. Two decades of innovations in information processing, communications technologies, and financial markets (e.g., credit bureaus, computers, the Internet, adjustable-rate loans, credit scoring, asset securitization, financial derivatives), plus a wave of industry deregulation that abolished barriers to diversification across geographic and product market boundaries, have allowed banks to (a) expand into non-intermediation activities, (b) alter the nature of their intermediation processes, and (c) adopt new methods of managing the risks inherent in intermediation. Collectively, these changes have reduced the degree of association between assets and liabilities that has traditionally been necessary for banks to operate profitably. Today banks generate an increased portion of their income from non-intermediation and/or non-interest activities; (Robert DeYoung and Chiwon Yom, 2008).

Non-interest income is other alternative means of income other than earning from loans. It includes fees earned from offering unit trust services, service charge on deposit account, standard fees, and charges for other bank services. With increasing globalization and financial liberalization, the bank business has been undergoing a gradual transformation away from the traditional business of financial intermediation and towards provision of other financial services including mutual fund, insurance etc. Thus, non-

interest income would represent a key source of bank revenue at present and in the future Rasiah (2010). By more aggressively selling services other than loans such as brokerage, insurance and trust services, bankers have found a promising channel for boosting the income statement by diversifying their income sources, and for insulating their banks more adequately from fluctuations in interest rates and loan default risk. Furthermore, higher diversification regarding banks' income sources towards derivative instruments and other fee-based activities shows a positive effect on banks profitability on the Korean banking sector Sufian (2011).

Types of non-interest income

According to L. W. Huang, Y. K. Chen (2006), non-interest income can be classified into the following manners.

- **Total Non-Interest Income** The sum of fiduciary activities income; service charges on domestic deposit accounts; trading revenue; fees and commissions from securities brokerage; investment banking, advisory, and underwriting fees and commission; fees and commissions from annuity sales; underwriting income from insurance and reinsurance activities; income from other insurance activities; venture capital revenue; net servicing fees; net securitization income; net gains (losses) on the sales of loans, OREO, and other assets (excluding securities); and other non-interest income.
- **Fiduciary Activities Income:** - Income derived from services rendered by trust departments of banking subsidiaries or a subsidiary acting in any fiduciary capacity.
- **Service Charges on Domestic Deposit Accounts**

- **Trading Revenue:** - The net gain or loss recognized from trading cash instruments and derivative contracts (including commodity contracts). It results from revaluation adjustments (as a result of periodic marking to market) to the carrying value of trading assets and liabilities, as well as interest rate, foreign exchange, equity derivative, and commodity and other contracts.
- **Investment Banking Fees and Commissions:** - The sum of fees and commissions from securities brokerage; investment banking, advisory, and underwriting fees and commissions; and fees and commissions from annuity sales.
- **Insurance Activities Revenue:** - The amount of insurance and reinsurance underwriting income plus other insurance and reinsurance activities income.

2.1.2 Determinants of Non-Interest Income

Technological factors

Technological development has facilitated the rapid development of new financial products. While a large proportion of innovations could not have been possible without developments achieved in the theory of finance, it is mostly technological progress that has made the wide use of these innovations possible. The independent role of financial innovations is a debated issue, whereby some commentators would see them as a major factor in themselves in generating financial change and some as byproducts or natural consequences of technological development. In the late 1970s noninterest income represented 20% of bank operating revenues. By 2000 this ratio doubled to

approximately 40%. Banks have benefited from advances in information and communications technology that created new opportunities for fee income. Where banks previously collected deposit account fees primarily for safe-keeping and checking services, they now also collect fees for internet banking and ATM use. There have also been innovations in lending practices where banks can provide noninterest activities ranging from loan securitization to credit scoring, Garrett Meier (2011).

While banks are still interested in developing their traditional business of intermediating in the market between depositors and borrowers, they also try to widen their other sources of income so that they are not left out in the game profitability. Non-interest income is a good source of profitability, since it does not require the presence of underlying assets. In that case no extra resources in the form of liabilities are needed in order to fund that what procedures non-interest income. In this case the banks are able to achieve higher profitability and efficiency ratios, S. Karlos (2009). According to the author, two most important factors are playing the major role to increase the non-interest income, i.e. technological progress and banking deregulation. In short technological progress has allowed the banks to develop new products and services for which they can charge fee income. Deregulation has widened the field of services that the banks can now provide, so they can get extra fee income from there also. A well-managed bank should not neglect core banking activities. It will be also able to render fee generating service to a wide range of its clientele, so it will be able to produce bigger amounts of income.

S. Karlos (2009) also explain about another source of non-interest income, namely “other operating income”. This does not contribute dearly to total income because it is mostly consisted from one off items that are not part of a bank’s day to day business. Such income would be gains from sales of fixed assets or gains from sale of subsidiaries and other extraordinary items like back dated remuneration from insurance companies, or possible income tax returns. He also added another source of non-interest income in his study, i.e. securitization. It works as follows; a banking group categorizes loans per classes (i.e. mortgage loans, small business loans etc.) and sells them to another company build for that exact cause. The bank continues to service these loans, and for their, it receives commissions and fees from the companies. These commissions are calculated as a percentage on the volume of the loans sold.

According to Roland and Maxwell (2005) there are some factors that could have led to growth in non-interest income in the banking industry worldwide. These are deregulation, globalization and rapid technological advances in information flows, communications infrastructure and financial markets. Banking industry deregulation fosters competition between banks, non-banks and financial markets by removing restrictions that stunt the evolution of the banking system constrain the efficiency of the financial product markets and extend the lives of poorly run and /or sub-optimal-sized commercial banks.

Advances in information and communications technology (for example, the Internet and Automatic Teller Machines (ATMs)), new intermediation technologies for processes like loan securitization and credit scoring, and the introduction and expansion of financial

instruments and markets (high yield bonds, commercial paper, financial derivatives) all impacted on the levels and types of non-interest income at commercial banks. In essence, these changes meant that banks could extract fee income from customers who were willing to pay for use of ATMs and /or the Internet rather than undertake business at traditional branches.

According to DeYoung et al. (2004), deregulation and technological change have transformed the U.S. banking industry into two primary size-based groups. The first group consists of large banking institutions, characterized by the use of hard information, impersonal relationships, low unit costs, and standardized loans, while the second group is made up of small banks, characterized by the use of soft information, relationship development, higher unit costs, and non-standardized loans.

Improvements in information technology, which have made it easier for households, corporations, and financial institutions to evaluate the quality of securities, have made it easier for business firms to borrow directly from the public by issuing securities. In particular, instead of going to banks to finance short-term credit needs, many business customers now borrow through the commercial paper market. The ability to securitize assets has made nonbank financial institutions even more formidable competitors for banks. Advances in information and data processing technology have enabled nonbank competitors to originate loans, transform these into marketable securities, and sell them to obtain more funding with which to make more loans. Computer technology has eroded the competitive advantage of banks by lowering transactions costs and enabling nonbank

financial institutions to evaluate credit risk efficiently through the use of statistical methods. When credit risk can be evaluated using statistical techniques, as in the case of consumer and mortgage lending, banks no longer have an advantage in making loans, Franklin R. Edwards and Frederic S. Mishkin (1995).

Loans and Advances

It is needless to emphasize that extending loans is one of the most important role of banks. The interest raised from the loans is the most important source of the 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, Sastrosuwito and Suzuki (2011).

Size of banks

The relationship between the size of banks and non-interest income should indicate to what extent larger banks have more possibilities than smaller ones to generate and sustain non-interest income and to translate it into higher levels of profits and increased value for shareholders, European Central Bank (2000).

Size is perhaps one of the most important bank characteristics when discussing noninterest income. It is widely held within the literature that noninterest income activities are driven by

the larger institutions. Rogers and Sinkey (1999) observe that some institutions are incapable of producing certain categories of noninterest income, such as trading, because of the economies of scale that are required for these activities. DeYoung and Rice (2004) suggests insurance and securitization activities also enjoy economies of scale. Intuitively, having a larger client base means there are more opportunities to sell insurance products, which are relatively costless to sell if a network is already in place to distribute them.

According to DeYoung and Rice (2004), the composition of noninterest income also differs across banking companies of different sizes. Large banking companies generate disproportionately more noninterest income from securitizing and servicing mortgage and credit card loans, because the automated production processes used to produce these services exhibit substantial scale economies. Similarly, large banking companies are better able to employ the concentrations of financial experts and develop the institutional information databases necessary for the production of investment banking, insurance underwriting, and private banking (fiduciary) services. However, there are other areas in which smaller banking companies generate a higher percentage of noninterest income than larger banking companies. Because small banking companies rely more on core deposit funding (such as household and small business checking accounts) than do larger banks, deposit service charges comprise a large part of their fee income base. And fee income from the sale of insurance products shows no size bias—possibly because small banking companies have been successful at cross-selling insurance products to their existing household and small business clients.

Income diversification theory

Literature on diversification in the banking industry suggests that there exists several type of diversification: geographical, source of income, product/services, and economic sectors (Tabak et al., 2011; Pennathur et al., 2012). These studies are particularly concerned with discussion as relates to income diversification into non-interest income sources. Banks' traditional income comes from interest charged on loans. However, this income source raises a number of issues and in developed countries such as the USA; it is widely believed that the traditional banking activities are on the decline (Smith et al., 2003). As banks diversify income to fee-based activities, finance theory suggests that this leads to increased profitability and stabilization of income.

The HHI measures the shift into non-interest income or fee based income generating activities. As HHI rises the bank becomes more concentrated and focused on one source of income and less diversified. Hence, well diversified banks are reflected by a small HHI index; the smaller the index, the more diversified the bank, J. Kiweu (2012).

Traditional banking activities

Rogers (1998) looks at noninterest income and efficiency of US commercial banks. By estimating cost, revenue, and profit frontiers the author determines where the gains or

losses in efficiency are derived. The results show that banks with noninterest income are more efficient than those without. In addition, the gains are derived primarily from cost efficiency. The authors conclude that any study examining bank efficiency must consider noninterest activities. Rogers and Sinkey (1999) examine some fundamental bank characteristics and how they are related to fee income. Their results show that banks that engage in noninterest activities are larger, have smaller core deposits, and have smaller net interest margins. The authors argue that larger banks, which face more competition, are less profitable from intermediation activities, and diversification into noninterest income can offset these losses. They also find that fee income is related to a reduction in various accounting risk measures. DeYoung and Roland (2001) found that as banks shift away from traditional intermediation activities and into fee-based services, the volatility of earnings increases. More specifically, fee income appears to increase revenue volatility and the degree of total leverage. However, the authors also find an increase in profitability associated with fee income that partially compensates banks for the increase in risk. Banks have always earned noninterest income from their depositors, charging fees on a variety of transaction services (for example, checking and money orders), safe-keeping services (for example, insured deposit accounts, safety deposit boxes), and cash management services (for example, lock box or payroll processing). Other traditional lines of business for which banks have always earned fee income include trust services provided to a wealthy retail clientele and providing letters of credit (as opposed to immediate dispersal of loan funds) to corporate clients, R. DeYoung and T. Rice (2004).

2.2 Empirical literature

J. Kim and Y. Kim (2010) try to examine why noninterest income varies across banks and how noninterest income is associated with bank financial performance. In this paper, they document the long-run trends in the amount and composition of noninterest income at South Korea banks. And they discuss the regulatory and technological determinants of noninterest income at commercial banks, and consider why noninterest income has grown more quickly at some banks than others. They further discuss the potential effects of increased noninterest income on the financial performance of commercial banks. For this reason, they specify an econometric model designed to answer two broad questions: Which bank characteristics, market conditions, and technological developments are most closely associated with increased noninterest income? Is noninterest income associated with improvements or declines in bank financial performance? They use the 1999-2009 panel data sets of South Korea banks to estimate the econometric model. They find numerous strong statistical associations between noninterest income and bank characteristics, market conditions, technological progress, and bank performance.

S. Karols (2009) tried to examine links between bank non-interest, business strategies, technological change, and financial performance between 1988 and 2008. The results indicate that bank size plays a clear role in generating non-interest income, while any attention towards core banking activities contribute more to interest income. Well-

managed banks are present in non-interest income activities, but their transaction is slow and pre planned. Non-interest income is co-existing is interest income and leads to increased profitability ratios, but should be considered a secondary source of income, supplementary of core-banking activities.

Sherene A. Bailey-Tapper studied on Non-interest Income, Financial Performance & the Macro-economy: Evidence on Jamaican Panel Data in 2010 by applying a SUR model to Jamaican panel data for the period March 1999 to September 2010. The study also investigates the determinants of non-interest income in a context of the increasing reliance by banking institutions on revenue generation from non-interest income activities. ATM technology, personal lending and loan quality are among the main microeconomic factors driving the performance in non-interest income in the commercial banking sector. Regarding the macroeconomic environment, interest rate and foreign exchange rate volatility are the key factors which explain the performance in non-interest income. Against this background, stronger performance in non-interest income not only leads to increased profitability but also increased variability in performance. Additionally, results for large banks show that lower earnings on investments lead to increases in service charges from loans and may reflect more aggressive loans expansion by these increase institutions to increase fee income.

R. Craigwell and C. Maxwell (2005) discussed the trends in non-interest income at commercial banks in the Caribbean between 1985 and 2001, as well as investigate the determinants of non-interest income and its impact on commercial bank financial

performance in Barbados. The paper reveals that the incidence of non-interest income in Barbados declined over the period, contrary to the findings in Jamaica and Trinidad and Tobago as well as the wider developed world. A review of the literature and a panel data regression model confirm that the result for Barbados may be attributed to the absence of some of the factors that were pinnacle to the generation of non-interest income in developed countries, such as deregulation and technological change, especially for the development of loan securitization and credit scoring. The empirical evidence supports bank characteristics and the ATM technology as the most influential factors shaping the trend of non-interest income in the banking industry in Barbados and suggests that non-interest income is positively related to both bank profitability and earnings volatility.

R. K. Uppal (2010) studied on “Stability in Bank Income through Fee-based Activities” and he attempt to study the trends in non-interest income which is a vital source of stability in bank income. The non-interest income activities of banks are also on the increase in recent years. This has helped to stabilize the total income of banks. Increase in non-interest income as a source of funds for banks would also greatly be helpful for maintaining the financial soundness of banks. Interest is by far the most important cost as also income of banks. Now a day due to the introduction e delivery channels by various banks the source of other income has changed. Some new private sector banks and foreign banks are earring non interest from e delivery channels. The gap between public and private sectors banks is increasing. The public sector banks should adopt new methods to increase their non- interest income.

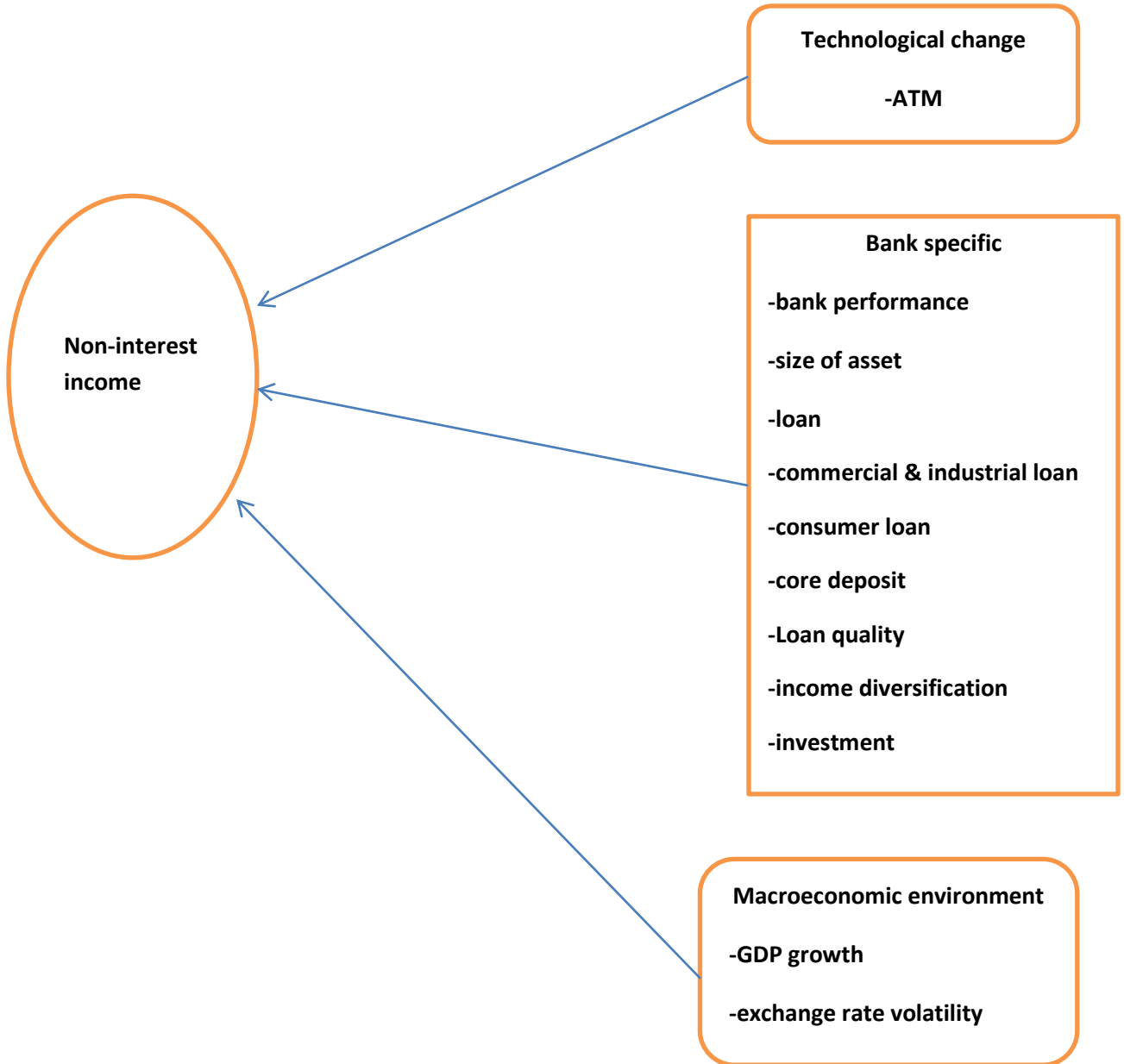
C. Mesiev and et al (2013) studied on the income diversification of banks by the title of “Is Bank Income Diversification Beneficial? Evidence from an Emerging Economy” using a unique data set with detailed information on noninterest income. In this paper, they find diversification to be beneficial for Philippine banks, consistent with Sanya and Wolfe (2011) who study the income diversification-performance relationship of listed banks in 11 emerging economies. Philippine banks have a different non-interest income structure. For an average Philippine bank, the share of trading activities in non-interest income is relatively higher compared with an average U.S. bank. Whereas most of the fee-based income is obtained from traditional bank intermediation activities, trading income is nontraditional as its growth is less correlated with net interest income growth. From a standard portfolio approach, this may indicate that there may be higher diversification benefits from shifts towards trading income activities rather than shifts towards fee-based income activities. Their empirical results support this hypothesis, suggesting that shifts toward trading income, particularly from trading government securities, lead to higher bank profits and risk-adjusted profits. And also they examine how bank ownership may affect the income diversification performance relationship. On the whole, their findings highlight that the development of nontraditional intermediation activities in banking have different implications in terms of profitability and risk in the case of an emerging economy. Specifically, bank ownership (foreign/domestic) and the engagement in SME funding as well as the presence of specific regulations to promote small scale lending matter.

Asli Demirgüç-Kunt and Harry Huizinga (2009) examine the implications of bank activity and short-term funding strategies for bank risk and return. Expansion into non-interest income generating activities such as trading increases the rate of return on assets, and it may offer some risk diversification benefits at very low levels. Non-deposit, wholesale funding in contrast lowers the rate of return on assets, while it can offer some risk reduction at commonly observed low levels of non-deposit funding. A sizeable proportion of banks, however, attract most of their short-term funding in the form of non-deposits at a cost of enhanced bank fragility. Overall, banking strategies that rely prominently on generating non-interest income or attracting non-deposit funding are very risky, consistent with the demise of the U.S. investment banking sector.

2.3 Conceptual Framework

This conceptual framework describes the relationship of non-interest income with bank characteristic, technological change and macro-economic environment. This relationship described in the following diagram.

Figure 1: Relationship between Non-interest income and its determinants



CHAPTER THREE

Research Methodology

From the previous chapter the researcher discussed about the theoretical and empirical facts of the selected dependent and independent variables. Consequently, this chapter describes the methodology that is used in the empirical analysis to test the different hypotheses.

3.1 Research design

In order to achieve the main research objectives a quantitative research method approach were adopted.

3.2 Model Specification

The researcher used the multiple linear regression and ordinary least square (OLS) estimation method. Modeling is based on panel data techniques. Panel data comprises of both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the different Ethiopian commercial banks and the time-series element is reflected in the period of study (2004-2013). The study used a panel regression technique to analyze the impact of bank specific, technological effect as well as macroeconomic determinants Non-interest income of Ethiopian commercial banks. The general model to be estimated is

the following linear forms which, is adopted from DeYoung and Rice (2003). Accordingly, the researcher has left out some of the factors seen by the earlier researchers for they are not applicable in our country. One of the excluded variables is credit card banking. The other variable is Real estate loan, since most banks did not render such service.

$$\begin{aligned} \text{NIIRATIO}_{t,i} = & \beta_0 + \beta_1 * \text{RELROA}_{t,i} + \beta_2 * \text{CORERATIO}_{t,i} + \beta_3 * \text{FTERATIO}_{t,i} + \beta_4 * \text{LNASSET}_{t,i} \\ & + \beta_5 * \text{HHI}_{t,i} + \beta_6 * \text{LOANRATIO}_{t,i} + \beta_7 * \text{INVT}_{t,i} + \beta_8 * \text{CISHARE}_{t,i} + \beta_9 * \text{ATM}_{t,i} + \\ & \beta_{10} * \text{CONSHARE}_{t,i} + \beta_{11} * \text{LOANQUALITY}_{t,i} + \beta_{12} * \text{EXVOL} + \beta_{13} * \text{GDPgrowth} + \epsilon_{t,i} \end{aligned}$$

Where; NIIRATIO is non-interest income ratio with total asset

RELROA is relative performance

CORERATIO:- deposit to total asset

FTERATIO: - number of bank employees per deposit transaction

LNASSET:- bank size

HHI:- income diversification

LOANRATIO:- total loan to total asset

INVT:- investment other than loan

CISHARE: - commercial and industrial loan

ATM:- technological factor

CONSHARE: - consumer loan

LOANQUALITY:- allowance for loan loss

EXVOL:- exchange rate volatility

GDPgrowth: - real GDP growth

But after taking of different OLS tests it is found that there is a multi-collinearity problem between independent variables of LNASSET and FTERATIO. Therefore, one of the variables has to be drop the model. Thus the model is rewritten as below;

$$\text{NIIRATIO}_{t,i} = \beta_0 + \beta_1 * \text{RELROA}_{t,i} + \beta_2 * \text{CORERATIO}_{t,i} + \beta_3 * \text{LNASSET}_{t,i} + \beta_4 * \text{HHI}_{t,i} + \beta_5 * \text{LOANRATIO}_{t,i} + \beta_6 * \text{INVT}_{t,i} + \beta_7 * \text{CISHARE}_{t,i} + \beta_8 * \text{ATM}_{t,i} + \beta_9 * \text{CONSHARE}_{t,i} + \beta_{10} * \text{LOANQUALITY}_{t,i} + \beta_{11} \text{EXVOL} + \beta_{12} \text{GDP}_{\text{gwth}} + \epsilon_{t,i}$$

3.3 Variables Definition and Measurements

Dependent variables

The study use non-interest income as the dependent variable. The dependent variable total non-interest income as a share of assets and is defined as **NIIRATIO**, where non-interest income is the sum of fee-based income, trading income and other non-interest income. Where, i and t indicates bank and period respectively.

Fee-based Income: sum of bank commissions, service charges/fees and other commissions/fees

Trading income: sum of trading gain from government securities, commercial paper, financial derivatives; foreign exchange profit/loss, gold trading gain/loss; profit on sale or redemption of investments.

Other non-interest income: sum of income from trust department and other income

NIIRATIO = f(Bank specific, Technological change, and macroeconomic environment)

Independent variables

Identifying appropriate indicators for the determinants is a difficult task because of the unavailability of some of the data and because the chosen proxy may have more than one interpretation. With these cautions in mind the indicators of the determinants will now be given.

Bank Specific Variables

- **Bank efficiency (RELROA)** it can be said also bank relative performance and measured by each bank's relative financial performance, calculated as the bank return on assets minus the average return on assets of the other banks.

Income Diversification In order to measure income diversification level of each bank, it can be calculating widely used Herfindahl Hirschman Index (**HHI**) for all banks (Paul R. Teimet and et al, 2011). As HHI rises the bank becomes more concentrated and focused on one source of income and less diversified. Hence, well diversified banks are reflected by a small HHI index; the smaller the index, the more diversified the bank.

- **Bank Lending Strategy:-** Several indicators were tried to capture the strategic responses of banks. From the lending side, the loan-to-asset ratio (**LOANRATIO**), the composition of the loan portfolio, consumer loan share (**CONSHARE**) measured by consumer loan to total loan and commercial and industrial loan share (**CISHARE**) calculated by

commercial and industrial loan divided by total loan, and the riskiness of the loan portfolio (allowance for loan-losses-to-assets ratio (**LOANQUALITY**)).

- **Traditional Banking activities:** - Apart from the lending side of the banks' strategy, this study also incorporates core deposits-to assets ratio (**CORERATIO**) to capture the traditional relationship banking. This helps to commercial banks to get service charges from their cheque depositors by charging some amount of fees by number of transaction.

- **Investment Other than Loan (INVT):-** it can be measured by dividing investment other loan made by a bank to total asset. As the volume of investment increases, it assumed that amount of non-interest income rises.

- **Bank size (LNASSETS)** is capture by the log of assets. Although some literatures generally suggest that it is large banks that tend to generate more non-interest income, there is no priori reason why small banks cannot use non-interest income to boost their revenue streams.

Technological Factors

- **Technology change (ATM)** is captured by a dummy variable reflecting the introduction of ATMs. As DeYoung and Rice (2003) argue, this type of technology advance and adoption is expected to increase non-interest income at banks by generating new fee income that more than outweighs the losses of fee income related to the reductions in cash balance depositors need to hold in checking and other liquid bank accounts.

Macro-economic factors

Two measures have been included as proxies of the macroeconomic environment, which include the growth in domestic GDP (GDPgwth) and exchange rate volatility (EXRVOL).

- **GDP growth** is measured by dividing yearly percentage of GDP growth by 100. It expected to have a direct relation with non-interest income.
- **Exchange Rate Volatility (EXRVOL)** is calculated by taking the yearly percentage change of exchange rate between Ethiopian birr and USD.

3.4 Source of Data and Method of Collection

The source of data for this study was collected from secondary source of data. The secondary data acquired from internal and external sources. The internal sources (financial statements) are collected from annual reports of Ethiopian commercial banks. The external sources are collected from National Bank of Ethiopia, Ministry of finance and economic development MoFED and Central Statistics Agency (CSA) annual reports. Data regarding with GDP growth and exchange rate were collected from the above three bodies.

Data employed for the purpose of this study obtained from financial statements of 8 commercial banks that operated in the Ethiopian banking industry. The time series data were collected from 2003/4 to 2012/13.

3.5 Sample and Sampling technique

All commercial banks which were operational within Ethiopia in the study period were included except Development Bank of Ethiopia. The data set consists of two banks which are wholly owned by public sector and six banks which are wholly owned by the private sector. Hence, Commercial bank of Ethiopia (CBE), Construction and Business Bank (CBB), Dashen Bank (DB), Awash International Bank (AIB), Bank of Abyssinia (BOA), United Bank (UB), Nib International Bank (NIB) and Wegagen Bank (WB) are the sample of this study. All the above banks was established before the study period and they are also another 11 banks in the country but they are not qualified to fulfill the study period. Of course, one of them does fulfill but it doesn't participate in the common commercial banking service. Therefore, it fails to be a sample. This study used panel data for the period of ten years (2003/04-2012/13). Convenience non-probability sampling technique was used for the selection of sample.

3.6 Method of Data Collection

The secondary data were obtained from the annual financial reports and make computation for the internal and external variables.

3.7 Method of Data Analysis

The collected data regressed by panel data fixed effect regression method and interpret with the help of different financial ratio and statistical description including standard deviation, average, minimum and maximum (descriptive statistics) and multiple regressions (significant test). To conducted this, the researcher supported by statistical tools like Eviews 6 software.

CHAPTER FOUR

Empirical Results and Discussion

This chapter analysis the determinants of non-interest income of Ethiopian commercial banks, using the annual balanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment spanning from the period 2003/4 up to 2012/13 and a cross section segment which considered eight Ethiopian commercial Banks. These are; Commercial Bank of Ethiopia, Construction and Business bank, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank. Prior to conducting the regression of the determinants of non-interest income, it is essential to test the appropriateness of the panel data (both time - series and cross – section data) based on assumption of OLS diagnostic test.

4.1 Tests for the Ordinary List square (OLS) Assumptions

As of Brooks (2008), these assumptions need to be maintained to have a valid estimate of coefficients and make an inference. So that, we have presented the test results of the model estimated and an appropriate solution has also been taken to maintain the assumptions.

Assumption one: the errors have zero mean ($E(\epsilon) = 0$)

As long as a regression model has a constant term, this assumption will never violate. Thus models we estimated are in line with this assumption.(Brooks, 2008)

Assumption two: homoscedasticity (variance of the errors is constant ($\text{var}(\epsilon) = \sigma^2 < \infty$))

Among the OLS assumptions, the other diagnostic test which is conducted in this study is heteroscedastic test. This theoretically expressed as by Brooks (2008,p.132) $\text{var}(u_t) = \sigma^2 < \infty$; it has been assumed that the variance of the errors is constant, σ^2 -this is known as the assumption of homoscedasticity.

Table-2 Heteroskedasticity Test: White

Heteroskedasticity Test: White

F-statistic	0.908799	Prob. F(12,67)	0.5430
Obs*R-squared	11.19877	Prob. Chi-Square(12)	0.5120
Scaled explained SS	13.61277	Prob. Chi-Square(12)	0.3261

Source; From Eviews result

The test of the hypothesis that “there exists no heteroscedasticity” is made for the model estimated. The above table indicates that both F-statistic and X^2 test fail to reject at 1%, 5%, and 10% significance level, this indicates the variance of the errors is constant.

Assumption Three: Covariance Between the Error Terms over Time Is Zero (Cov $(\epsilon_i, \epsilon_j) = 0$ for $i \neq j$)

Assumption 3 that is made of the CLRM's disturbance terms 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 'autocorrelated' or that they are 'serially correlated'. A test of this assumption is therefore required. This test can be made through Breusch-Godfrey (BG) Serial Correlation LM Test, which is a more general test for autocorrelation up to the r^{th} order. In this case we have tried to make fourth order autocorrelation test.

Table 3 Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.561214	Prob. F(10,57)	0.1422
Obs*R-squared	17.20058	Prob. Chi-Square(10)	0.0700

Source; computed from Eviews result

In the above table the output of Eviews offers two versions of the test; an F -version and a χ^2 version from the Breusch-Godfrey Serial Correlation LM Test. From the table one can understand that no autocorrelation. This is because p-value is 0.1422, which is insignificant at 5% significance level.

Assumption Four: Normality (Errors Are Normally distributed ($T \sim N(0, \infty^2)$))

According to Brooks (2008), if the residuals are normally distributed, the histogram should be bell-shaped, the kurtosis must be no by far large from three and the Bera--Jarque statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be greater than 0.05 to not reject the null of normality hypothesis at the 5% level. The test result for the model provides a p-value of greater than 5% evidencing that residuals are normally distributed, (see in appendix).

Test for Multicollinearity

In addition to the above five OLS assumptions an implicit assumption called multicollinearity, that is made when using the OLS estimation method. It assumes that explanatory variables not correlated with one another. If there is no relationship between the explanatory variables, they said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. But if explanatory variables are highly correlated, the problem is said to be multicollinearity. This is common when dealing with number of variables at a time. (Brooks, 2008).

The correlation matrix (Table-4) shows that bank size is highly correlated with number of employees per deposit transaction with a correlation coefficient of - 0.7796

One way of solving multicollinearity problem is ignoring one of the variables considering as if the two variables have similar effect. Therefore, we have ignored FTERATIO (number of employees per deposit transaction) variable.

Therefore the modified model is;

$$\begin{aligned} \text{NIIRATIO}_{t,i} = & \beta_0 + \beta_1 * \text{RELROA}_{t,i} + \beta_2 * \text{CORERATIO}_{t,i} + \beta_3 * \text{LNASSET}_{t,i} + \beta_4 * \text{HHI}_{t,i} + \\ & \beta_5 * \text{LOANRATIO}_{t,i} + \beta_6 * \text{INVT}_{t,i} + \beta_7 * \text{CISHARE}_{t,i} + \beta_8 * \text{ATM}_{t,i} + \beta_9 * \text{CONSHARE}_{t,i} + \\ & \beta_{10} * \text{LOANQUALITY}_{t,i} + \beta_{11} \text{EXVOL} + \beta_{12} \text{GDPgwth} + \epsilon_{t,i} \end{aligned}$$

The correlation matrix (Table-4) shows that bank size is highly correlated with exchange rate volatility with a correlation coefficient of -0.77958. Even if, relatively high positive correlation existed between size of banks and exchange rate volatility, the researcher ignored this near multicollinearity problem. Because Cooper and Schindler (2009) and Hailer et al (2006) suggested that multicollinearity problem should be corrected when the correlation extent to be above 0.8 and 0.9 respectively.

Descriptive statistics

Table-5 provides a summary of the descriptive statistics of the dependent and independent variables. The descriptive statistics are presented after checking the normality of the data. This is because the presence of non-normality (outliers) probably results in biased means and standard deviations when incorporated in the descriptive

statistics. They do not only affect the descriptive characteristics but could also deteriorate results from the regression using the OLS technique.

Table-5 summary of descriptive statistics of dependent and independent variables

Variables	Mean	Median	Stdv	Max	Min
NIIRATIO	0.000408	0.001131	0.007671	0.018775	-0.026850
RELROA	0.745992	0.758473	0.071888	0.873482	0.487107
CORERATIO	0.480027	0.462110	0.129930	0.705179	0.169983
LOANRATIO	0.809857	0.855605	0.204837	1.170946	0.009033
CISHARE	4.68E-07	4.43E-07	2.44E-07	1.60E-06	1.01E-07
LNASSET	22.53630	22.44741	1.168660	26.11136	20.32936
LOANUALITY	0.004721	0.003390	0.005872	0.033436	0.000000
CONSHARE	0.006784	0.005828	0.006987	0.035712	0.000000
HH	0.108800	0.113000	0.011604	0.126000	0.085000
INVT	4.767019	2.283539	16.76501	151.5362	0.717963
ATM	0.009821	0.000605	0.034354	0.190142	0.000000
GDPgrowth	0.237500	0.000000	0.428236	1.000000	0.000000
EXROVL	0.082660	0.060690	0.089781	0.250324	0.000000

Source:- computed from Eviews results

The mean of NIIRATIO of the sample banks is 0.000408. Its maximum value; minimum value and standard of deviation are 0.018775, -0.02685 and 0.007671. It reveals that NIIRATIO is distributed around the mean (the variation of NIIRATIO is very low).

The above table also shows that the descriptive statistics results of explanatory variables. Relative performance (RELROA) has a 0.745992 mean and 0.071888 of standard deviation. This indicates that 74.6% of Ethiopian commercial banks are well-managed banks. Its maximum and minimum is 0.873482 and 0.487107 respectively. The second independent variable is CORERATIO to measure the effect of traditional banking on non-interest income. It is found that with a mean of 0.480027 and standard deviation of 0.12993. It has a maximum and minimum value of 0.705179 and 0.169983 respectively. The next explanatory variable is loan to asset ratio. This variable has 0.809857 values of mean and 0.204837 of standard deviation; with 1.170946 and 0.009033 values of maximum and minimum respectively. The result indicates that banks in Ethiopia kept their 80% asset in terms loan. Commercial and industrial loan has a mean of 4.68E-07 and with standard deviation of 2.44E-07. Its maximum value is 1.60E-06 and minimum value is 1.01E-07. Size of asset is one variable to explain non-interest income with the average value of 22.53630 and standard deviation of 1.168660. The maximum and minimum values of size of banks are 26.1136 and 20.32936 respectively. Consumer loan is found with a mean of 0.006784 and standard deviation of 0.006987. Commercial banks advance very little amount of Consumer loan. Other variables have also a mean value of 0.004721, 0.108800, 4.767019, 0.009821, 0.237500 and 0.082660 for loan quality, HHI (income diversification), investment, ATM, GDP growth and exchange rate volatility respectively. The above last independent variables are found with a standard deviation of 0.005872, 0.011604, 16.76501, 0.034354, 0.428236 and 0.089781 based on their mean order

4.2 Discussion of Results of the Multivariate Regression Models

Test for Significance and Goodness of Fit Statistics

The test for significance can be done by examining the F-Statistic value and the p -value of zero attached to it that obtained from the regression result. Variables which have a value of above significance level is said to be insignificant but it is significant if it has a value below significant level. The null hypothesis is failed to reject, when it is above significant level. Since if this null hypothesis fail rejected, it would imply that none of the independent variables in the model was able to explain variations in the dependent variable. Goodness of fit, on the other hand, is a measure of how well the regression model actually fits the data. It tests how well the sample regression function (SRF) fits the data -- that is, how 'close' the fitted regression line is to all of the data points taken together. Adjusted R^2 is one of the goodness of fit measure. It tells what percentage of changes in dependent variables is explained by change in explanatory variables. (Brooks, 2008).

Table-7 (see below) shows that regression output by using Eviews software. Sample of banks are eight commercial banks with 10 years period. Therefore, the study has the total panel observation of 80.

Table-7 Fixed Effect Regression Result

Dependent Variable: NIIRATIO

Method: Panel Least Squares

Date: 05/22/14 Time: 18:54

Sample: 2004 2013

Periods included: 10

Cross-sections included: 8

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.020960	0.058399	-0.358904	0.7209
RELROA	0.399619	0.134760	2.965419	0.0043
CORERATIO	0.022777	0.018654	1.221071	0.2268
LOANRATIO	-0.020420	0.010760	-1.897721	0.0625
CISHARE	0.005870	0.004617	1.271540	0.2084
LNASSET	0.001741	0.002196	0.793132	0.4308
EXROVL	0.042969	0.011345	3.787380	0.0004
CONSHARE	-0.241729	0.176345	-1.370775	0.1756
LOANQUALITY	0.431533	0.191990	2.247688	0.0283
INVT	1.30E-06	6.25E-05	0.020723	0.9835
ATM	0.039277	0.027690	1.418443	0.1612
GDPGROWTH	-0.000780	0.002476	-0.314838	0.7540
HH	-0.009499	0.096366	-0.098571	0.9218

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.731733	Mean dependent var	0.033514
Adjusted R-squared	0.646782	S.D. dependent var	0.009905
S.E. of regression	0.005887	Akaike info criterion	-7.219880
Sum squared resid	0.002079	Schwarz criterion	-6.624373
Log likelihood	308.7952	Hannan-Quinn criter.	-6.981124
F-statistic	8.613576	Durbin-Watson stat	1.890674
Prob(F-statistic)	0.000000		

Source: - Computed from Eviews results

As per the regression result in table-7 for NIIRATIO the regression F-statistic takes a value of 8.613576 while the p-value attached to it takes a value of zero; and these figures reveal that the null hypothesis should be rejected. Thus, a linear relationship between non-interest income and the explanatory variables can be accepted. The adjusted R-square is 64.7%, which means 64.7% of the total variability of non-interest income about their mean value is explained by the model. Thus a model is sufficient to explain variability of NIIRATIO.

Discussions of Fixed Panel Data Results

To conduct the econometric analysis, a balanced panel of yearly observations for the eight commercial banks in Ethiopia during the period 2004 to 2013 is used. All computations are done using the econometric software program Eviews 6.

Among the bank specific variables, relative performance and loan quality has positive significant on non-interest income of Ethiopian commercial banks; and deposit, size, investments other than loan and commercial and industrial loan have also a positive effect on non-interest income but their effect is insignificant. However, loan to total asset has negative and insignificant effect on the dependent variable. And also variables like income diversification and consumer loan have a negative and insignificantly effect on non-interest income. Regarding technological factors ATM has a positive relation with insignificant effect on NII. The other factors are macro-economic variables. Exchange volatility has a positive and significant effect on non-interest income. But the GDP growth is insignificant effect with a negative sign.

Bank Specific Factors

Bank efficiency (RELROA):- the coefficient of RELROA is positive and statistically significant at 5% significance level. The results indicate that the relative performance of banks is important in explaining non-interest income performance in Ethiopia. This finding is consistent with Sherene A. Bailey-Tapper (2010) suggested that well managed banks generate higher amounts of non-interest income. However, the finding is contradicted with Roland Craigwell and Chanelle Maxwell (2005).

The ratio of allowance for loan-losses-to-assets was also included as a measure of loan quality.

Loan quality is the second important bank specific factor, which have a positive relationship and significant effect with non-interest income at 5% significance level which is consistent with the finding of Sherene A. Bailey-Tapper (2010). This is expected as generally the more risky the banking sector's portfolio, the greater the non-interest income, as this goes towards compensating banks' shareholders for risk. With respect to the riskiness of the loan portfolio, standard finance theory argues that the more risky the banking sector portfolio the greater non-interest income should be to compensate banks' shareholders for risk, Roland Craigwell and Chanelle Maxwell(2005). Therefore, as the banks risk increases, the return also increases.

Investment: - the regression result about investments by commercial banks indicate that there is a positive relation with non-interest income but statistically insignificant at 5% significance level. This result is contradicted with the finding of Sherene A. Bailey-Tapper (2010). He concluded that given the inverse relationship between the investment variable with large banks

and the other service charge ratio. However, consistent with the same author in which he conclude that a positive relation between small commercial banks' investment ration and other service charge ratio. Investment can be takes place in different way; for instance banks can buy share of insurance companies. This helps them to get non-interest income from insurance service. Therefore as the volume of investment other than loan increases, more opportunities to earn non-interest income.

Loan: - The loan-to-assets indicator carries the a priori sign, that is, high levels of loans-to-assets give low levels of non-interest income. The parameter on the loans to asset ratio is negative and insignificant effect at 5% significance level, indicating that banks which rely more heavily on an intermediation based strategy (whereby banks rely on interest income) are likely to generate lower levels of non-interest income. This finding is consistent with Craigwell & Maxwell (2005) and Sherene A. Bailey-Tapper (2010). According to Sastrosuwito and Suzuki (2011), loan is the most important source of interest income for banks. However, inherent with bank's loan is liquidity risk as well as credit risk. Thus it needs to take properly management to reduce such risks; otherwise banks' profitability and stability would be decreases. This indicate that, as the authors explained, focusing more on loan is leads to have more interest income thereby decreasing non-interest income.

Consumer loan (CONSHARE):- this variable has a negative parameter with insignificant effect at 5% significance level. Surprisingly other researchers', for instance, Craigwell & Maxwell (2005) and Sherene A. Bailey-Tapper (2010), finding is inconsistent with this finding but consistent with DeYoung and Rice (2003). Impliedly, banks which are focused on such type of loan would have low level of non-interest income.

Commercial and Industrial loan (CISHARE):- this has positive magnitude and insignificantly effect on non-interest income at 10% significance level. This finding is inconsistent with Sherene A. Bailey-Tapper (2010) and DeYoung and Rice (2003) but consistent with Craigwell & Maxwell (2005). This indicate that as banks advances more such loan, they collect more service income.

Income diversification (HHI): - with respect to income diversification, the parameter of HHI has negative relation with but insignificant effect on non-interest income at 5% significance level. The finding is contradicted with Craigwell & Maxwell (2005). As HHI rises the bank becomes more concentrated and focused on one source of income and less diversified. Hence, well diversified banks are reflected by a small HHI index; the smaller the index, the more diversified the bank. The result indicates that there is a negative relation between HHI and non-interest income. Thus, as HHI increases, non-interest income would be decreases and vice versa.

The variable '**CORERATIO**', which represents traditional relationship banking, is positive relation but insignificant effect on non-interest income, implying that banks in Ethiopia have been able to take advantage of the close relationships with depositors to encourage them to undertake additional fee-based services. However, it is contradicted with Sherene A. Bailey-Tapper (2010) finding which concluded as there is a significant and inverse relationship between deposits as a share of asset ratio and the non-interest income ratio, suggesting that larger banks have not been able use established customer relationships to generate stronger non-interest income earnings. Banks have always earned noninterest income from their depositors, charging fees on a variety of transaction services (for example, checking and money orders), safe-keeping

services (for example, insured deposit accounts, safety deposit boxes), and cash management services (for example, lock box or payroll processing). Other traditional lines of business for which banks have always earned fee income include trust services provided to a wealthy retail clientele and providing letters of credit (as opposed to immediate dispersal of loan funds) to corporate clients, R. DeYoung and T. Rice (2004). Therefore, researcher concluded that, Ethiopian commercial banks have relation with their depositor, thereby getting non-interest income by providing them fee-based service. Hence as the number of depositors increases, the level of non-interest income also increases.

LNASSET: - Size is perhaps one of the most important bank characteristics when discussing noninterest income. It is widely held within the literature that noninterest income activities are driven by the larger institutions. The bank size and organization indicators are insignificant but the sign is directly relation to the non-interest income. That is, the level of bank size is associated with slightly increment of non-interest income. This could be an indication that large banks provide more personalized service to customers than small banks. This is consistent with DeYoung and Rice (2004), suggests insurance and securitization activities also enjoy economies of scale. Intuitively, having a larger client base means there are more opportunities to sell insurance products, which are relatively costless to sell if a network is already in place to distribute them.

Technological factor

ATM: - the technology variable behaved as expected that technology is positively sign to generate non-interest income in Ethiopian commercial banks. Hence, the finding of this variable

is that banks with more advanced technology such as ATM banking tend to generate non-interest income. The coefficient on the technology variable (ATM) is positive but insignificant effect on non-interest income. This finding is consistent with Craigwell & Maxwell (2005). It is obvious that banks could provide a sophisticated service to their customers by the help of technology. Thereby, enhance their source of income. Previous researchers' finding indicated that, technology has a direct relation with non-interest income. De Young and Rice (2004) said that advances in communications and information technologies have led to new production processes for transactions and liquidity services, such as ATMs (automated teller machines) and online bill-pay, and deposit customers have been willing to pay fees for these conveniences.

Technological development has facilitated the rapid development of new financial products. While a large proportion of innovations could not have been possible without developments achieved in the theory of finance, it is mostly technological progress that has made the wide use of these innovations possible, Garrett Meier (2011). From the finding and previous researchers, we can concluded that technological development allowed banks to produce many of their innovative services at lower cost and more efficiently. This helps them to enhance service quality and increases customer convenience.

Macro-economic variable

GDP growth: - Regarding indicators capturing the influence of the banks' macroeconomic environment, GDP growth does not seem to be important in explaining; and also it has inverse relation with non-interest income in Ethiopia. The GDP growth of the country mostly relate with

construction of infrastructures. Banks are the key bodies for supporting such construction by advance loans. Thus, this makes them to focus on generating of interest income.

Exchange rate volatility (EXROVL) is directly related to and significantly effect on noninterest income at 5% significance level. This indicates 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 Sherene A. Bailey-Tapper (2010). 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.

CHAPTER FIVE

Conclusion and Recommendations

This study investigates the relationship between noninterest income and its determinants of Ethiopian commercial banks from the period of 2004 to 2013. The study also used an appropriate econometric methodology for the estimation of variables coefficient under fixed panel regression models. The following sections discussed about the final conclusion remarks of the study and applicable recommendations.

5.1 Conclusion

From the regression results it is revealed that relative performance and loan quality from bank specific factors and exchange rate volatility from macro-economic factors are the most influent determinants of non-interest income in Ethiopian Commercial Banks.

The coefficient of the bank efficiency (RELROA) is positive and it is statistically highly significant determinants of non-interest income at 5% significance level. This indicates that well managed banks generate higher amounts of non-interest income per birr of assets. Efficient banks would have higher non-interest income by diversify their source of income into different aspects.

Concerning the loan quality, the regression results in this research imply that the relation between allowance for loan and non-interest income is positive and insignificant at 5% significance level. This is indicated that generally the more risky the banking sector's portfolio, the greater the non-interest income. It can be conclude that Ethiopian commercial banks get more non-interest income from operations which have higher risk. Increasing in non-interest income is associated with riskiness of the banks' operation. As banks risk rises, banks' non-interest income also increases.

Finally, concerning with macro-economic factor, exchange rate volatility is directly related with non-interest income by having significantly effect at 5% significance level. In can be concludes that banks' would have high non-interest income, when the rate of foreign exchange increases. This is because the country's foreign trade demand is become increases from time to time. Traders need foreign exchange to run their business. Thus banks get spread by selling foreign exchange to traders.

5.2 Recommendations and Directions for Further research areas

Overall these empirical results provide evidence that; the non-interest income of Ethiopian commercial banks is shaped by bank efficiency, loan quality and foreign exchange volatility from bank-specific factors and macro-economic factors. The findings revealed that some factors have strongly effect on non-interest income, but the other factors are not significant factors so as to decide the level of banks' non-interest income. Therefore, the researcher forwarded some recommendations for concerned bodies in order to show the way how they could increase their portion of non-interest income without losing of their interest income.

Ethiopian Commercial Banks should improve their operational efficiency so as to keep the level of non-interest income up. They should focus on different aspects of banking activities, not only traditional banking operation.

Regarding with their risky operation, they don't have expect only risk free activities to generate income but they should have to participate on risky activities. This helps them to earn more non-interest income, because as their risky operation increases they would have greater return from such risky activities. They should look for new type of services, new market, innovative product, and so on in order to earn more non-interest income. Even if such types of operation have more risk, it would have also high return.

Exchange rate volatility has an important effect on non-interest income. This shows that there is highly an import-export activity in Ethiopia. Businesses 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.

In this researching area, the future researcher shall conduct research on the same issue by including other variables which wasn't included under this study. For example, by including mobile and internet banking variable so as to see technological impact deeply. It is advisable for the future to do research on the impact of non-interest income on banks' performance and so on. The last but not the least, I recommended that further researches should be done to ascertain whether noninterest income reduces risks via diversification.

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APPENDIXES

Table-2 Heteroskedasticity Test: White

Heteroskedasticity Test: White

F-statistic	0.908799	Prob. F(12,67)	0.5430
Obs*R-squared	11.19877	Prob. Chi-Square(12)	0.5120
Scaled explained SS	13.61277	Prob. Chi-Square(12)	0.3261

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/24/14 Time: 11:11

Sample: 2004 2013

Included observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.97E-05	0.000163	-0.610387	0.5437
RELROA^2	0.171963	0.139592	1.231896	0.2223
CORERATIO^2	2.30E-05	0.000102	0.225565	0.8222
LOANRATIO^2	6.02E-05	0.000121	0.497342	0.6206
CISHARE^2	-6.69E-06	3.44E-05	-0.194364	0.8465
LNASSET^2	9.68E-08	2.83E-07	0.342597	0.7330
EXROVL^2	0.001034	0.000432	2.396186	0.0194
CONSHARE^2	-0.017247	0.048243	-0.357501	0.7218
LOANQUALITY^2	0.019330	0.089224	0.216649	0.8291
INVT^2	-7.38E-09	7.09E-09	-1.039862	0.3021
ATM^2	-0.001235	0.001698	-0.727140	0.4697
GDPGROWTH^2	6.25E-06	2.85E-05	0.219304	0.8271
HH^2	0.003665	0.004276	0.857247	0.3944

R-squared	0.139985	Mean dependent var	3.91E-05
Adjusted R-squared	-0.014048	S.D. dependent var	7.32E-05
S.E. of regression	7.37E-05	Akaike info criterion	-16.04450
Sum squared resid	3.64E-07	Schwarz criterion	-15.65742
Log likelihood	654.7799	Hannan-Quinn criter.	-15.88931
F-statistic	0.908799	Durbin-Watson stat	1.825875
Prob(F-statistic)	0.543001		

Table-3 Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.561214	Prob. F(10,57)	0.1422
Obs*R-squared	17.20058	Prob. Chi-Square(10)	0.0700

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 05/24/14 Time: 11:14

Sample: 2004 2013

Included observations: 80

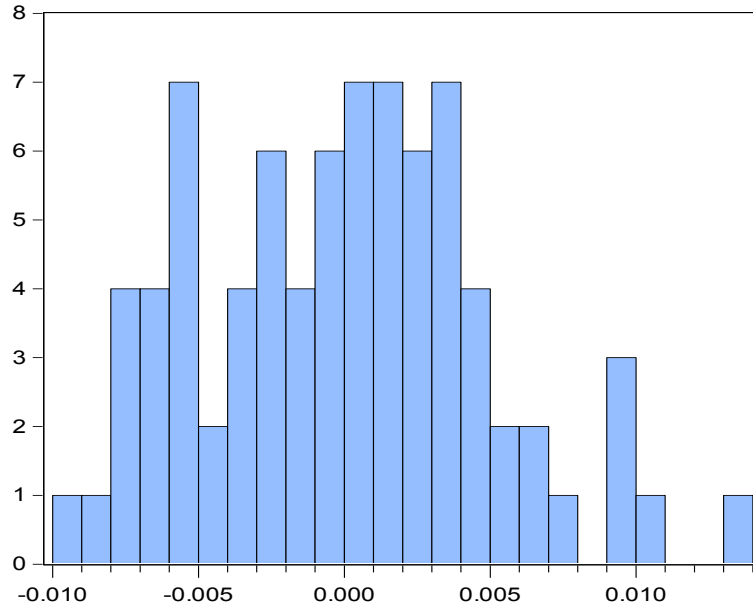
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.004551	0.038675	-0.117665	0.9067
RELROA	0.093137	0.136341	0.683120	0.4973
CORERATIO	0.005701	0.014076	0.405012	0.6870
LOANRATIO	-0.005319	0.013156	-0.404274	0.6875
CISHARE	0.002151	0.004220	0.509796	0.6122
LNASSET	-5.43E-05	0.001513	-0.035882	0.9715
EXROVL	0.001512	0.011438	0.132159	0.8953
CONSHARE	-0.023473	0.129650	-0.181047	0.8570
LOANQUALITY	0.006526	0.203583	0.032056	0.9745
INVT	5.14E-05	7.14E-05	0.719980	0.4745
ATM	-0.011823	0.025999	-0.454762	0.6510
GDPGROWTH	-0.000778	0.002969	-0.262107	0.7942
HH	0.020627	0.089192	0.231268	0.8179
RESID(-1)	0.302454	0.147850	2.045677	0.0454
RESID(-2)	-0.096364	0.148153	-0.650437	0.5180
RESID(-3)	-0.047303	0.143206	-0.330316	0.7424
RESID(-4)	0.100475	0.145902	0.688642	0.4938
RESID(-5)	0.150812	0.140037	1.076943	0.2860
RESID(-6)	-0.061119	0.143695	-0.425334	0.6722
RESID(-7)	-0.078483	0.145513	-0.539357	0.5917
RESID(-8)	-0.016485	0.147004	-0.112142	0.9111
RESID(-9)	-0.017116	0.144361	-0.118563	0.9060
RESID(-10)	0.244705	0.142746	1.714270	0.0919
R-squared	0.215007	Mean dependent var	-5.11E-17	
Adjusted R-squared	-0.087972	S.D. dependent var	0.006291	
S.E. of regression	0.006562	Akaike info criterion	-6.978998	
Sum squared resid	0.002454	Schwarz criterion	-6.294166	
Log likelihood	302.1599	Hannan-Quinn criter.	-6.704429	
F-statistic	0.709643	Durbin-Watson stat	2.040709	
Prob(F-statistic)	0.810997			

Table-4 Multicollinearity test before removing FTERATIO

	RELROA	CORERATIO	LOANRATIO	CISHARE	LNASSET	EXROVL	CONSHARE	LOANQUALITY	INVT	ATM	GDPGROWTH	HH
RELROA	1.000000	0.103446	0.256023	-0.371938	-0.102699	-0.045867	-0.191566	-0.149695	-0.443579	0.048506	0.104805	0.079969
CORERATIO	0.103446	1.000000	0.214515	-0.037175	0.152946	0.036277	0.303526	-0.120768	0.092257	0.213241	0.105126	0.066505
LOANRATIO	0.256023	0.214515	1.000000	-0.029896	-0.698599	-0.456234	-0.112894	0.413381	0.177785	-0.089299	-0.393884	0.368358
CISHARE	-0.371938	-0.037175	-0.029896	1.000000	-0.015636	-0.129845	0.129203	-0.017698	0.062786	0.003003	-0.152180	0.059897
LNASSET	-0.102699	0.152946	-0.698599	-0.015636	1.000000	0.349705	0.192362	-0.422630	-0.091257	0.185960	0.655559	-0.447419
EXROVL	-0.045867	0.036277	-0.456234	-0.129845	0.349705	1.000000	0.168808	-0.321969	-0.059399	0.195651	0.261317	-0.303726
CONSHARE	-0.191566	0.303526	-0.112894	0.129203	0.192362	0.168808	1.000000	-0.027279	0.228528	-0.095166	0.023419	-0.246910
LOANQUALITY	-0.149695	-0.120768	0.413381	-0.017698	-0.422630	-0.321969	-0.027279	1.000000	0.588821	-0.171638	-0.298371	0.318785
INVT	-0.443579	0.092257	0.177785	0.062786	-0.091257	-0.059399	0.228528	0.588821	1.000000	-0.043583	-0.091854	0.052083
ATM	0.048506	0.213241	-0.089299	0.003003	0.185960	0.195651	-0.095166	-0.171638	-0.043583	1.000000	0.363824	-0.182136
GDPGROWTH	0.104805	0.105126	-0.393884	-0.152180	0.655559	0.261317	0.023419	-0.298371	-0.091854	0.363824	1.000000	-0.410641
HH	0.079969	0.066505	0.368358	0.059897	-0.447419	-0.303726	-0.246910	0.318785	0.052083	-0.182136	-0.410641	1.000000

Figure-1 Normality test



Series: Standardized Residuals	
Sample 2004 2013	
Observations 80	
Mean	8.67e-20
Median	0.000139
Maximum	0.013688
Minimum	-0.009517
Std. Dev.	0.004908
Skewness	0.326420
Kurtosis	2.797732
Jarque-Bera	1.557042
Probability	0.459084

