DETERMINANTS OF COMMERCIAL BANKS OFF BALANCE SHEET ACTIVTIES: AN EMPIRICAL STUDY ON ETHIOPIAN BANKING INDUSTRY

BY:

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This is to certify that this thesis entitled: Determinants of commercial banks off balance sheet activities: *an Empirical Study on Ethiopian Banking Industry* is prepared by Tamrat Kasa, and submitted in partial fulfillment of the requirements for the degree of Master of Business Administration in Finance. It is my original work and has not previously been submitted for a degree at this or any other university. It complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

Off balance sheet activities have become an issue of global significance and have received attention for being a source of fee income that is beyond a bank's balance sheet activities and avoiding regulatory costs. Although much literature is available on off-balance sheet (OBS) activities in banking system, this is the first paper that investigates the off-balance sheet activities in Ethiopian banking industry. It aims to test the tax regulatory hypothesis and market discipline hypothesis in determining OBS activities of Ethiopian commercial banks using panel data set during the period of 2005-2012, with a sample of eight Ethiopian commercial banks. To answer research questions and test the hypotheses the study adopted the quantitative research approach. The model considers the impact of size, profitability, loan, credit risk, efficiency, market concentration, capital adequacy, reserve requirement, real GDP, interest rate spread and inflation on off balance sheet activities of banks. The estimation results show that all bank-specific determinants, with the exception of credit risk and loan, significantly affect commercial banks off balance sheet activities in Ethiopia. From the regulatory factors reserve requirement is also a significant determining factor of off balance sheet activities, where capital adequacy requirement negatively affects OBS activities but not significantly. Finally, with regard to macroeconomic variables, only inflation exhibits insignificant relationship with banks' OBS activities. The implications of these results suggest that regulations, institutional, and technological deficiency in Ethiopia prevent the banking system from adopting different financial innovations. The results of the study are of value to both academics and policy makers.

Keywords: Off-Balance Sheets Activities, Regulatory tax hypothesis, Market discipline hypothesis and Commercial Banks.

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List of Acronyms

CAR	Capital Adequacy Ratio
CLC	Commercial Letter of Credit
CPI	Consumer price index
HP	Hypotheses
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
LLP	Loan Loss Provision
MENA	Middle East and North Africa
NBE	National Bank of Ethiopia
NIM	Net Interest Margin
OBSA	Off -Balance Sheet Activity
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
RQ	Reserve Requirement
ROA	Return on Asset
SLC	Standby Letter of Credit

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

The commercial banking industry has changed dramatically over the past twenty years, and one notable change is in the composition of bank businesses and product lines toward non-interest income activities such as off balance sheet activities. As a result the structure of the balance sheet of commercial banks has experienced changes with the introduction off balance sheet activities. Off-balance sheet activities refer to banking products and practices not related to traditional forms of portfolio lending. Such OBSA[1] involve earning fee incomes by means of transactions that are not registered on bank's balance sheets (Hassan et al. 1991). Off-balance sheet activities are contingent commitments or contracts which generate income to a bank, but are not captured as assets or liabilities under conventional accounting procedure (Nachane and Ghosh 2002).These items are recorded in a bank's accounts as notes to balance sheet. Off-balance sheet activities of commercial banks include guarantees, commitments, market-related activities (financial derivatives), and advisory or management functions (Khambata and Hirche 2002 as cited in Karim and Sok Gee 2007).

Banks use off-balance sheet activities for different purpose. One purpose, Off-balance-sheet activities have the potential to generate positive cash flows, and influence the production mix of banks (Lozano and Pasiouras 2010).

[1] Off balance sheet activities

According to Khambata (1989), engagement in the off-balance sheet activities also help to improve the commercial banks' scope of operations, and diversification of product lines and earnings. This is because; these activities generate a new fee income source that is beyond a bank's balance sheet activities. Roland and Maxwell (2006) indicated that greater competition in the financial markets has diminished the cost advantage banks had in acquiring funds and has undercut their position in loan markets. As a result the profitability of traditional banking activities such as business lending and raising deposits has diminished in recent years. Therefore, banks engage in OBS activities hoping to earn additional fee income to compensate declining margins or spreads on their traditional lending business (Ahmad 2007). It is seen as a means to improve returns and bring value to the shareholders. Nevertheless, according to Joon-Ho Hahm (2008), Stiroh (2002) and Calmes (2009) greater reliance on noninterest income has been associated with higher volatility of bank income and higher risk, but not with higher returns.

Banks also engage in these activities as a risk management instrument against increasing credit risk (Ahmad, 2007). Banks may use OBS activities as a risk management instrument to generate another income source to compensate for the loan loss. Shahida, Ismail and Ahmad (2006) found that banks with high involvement in nontraditional activities are less risky. However, OBS activities have both risk reducing as well as risk increasing attributes and the net impact of the risk will depend on the ability to manage the risk resulting from engaging in these activities (Ahmad 2007). For example guarantees will increase banks' risk because the bank is obligated to make payments in future under certain circumstances, which may appear to be unfavorable to the bank

(Hassan et 1993). Another reason banks engage in these activities is to avoid regulatory costs such as minimum reserve, deposit insurance, and capital adequacy requirement (Ahmad 2007; Ahmad et al 2012; Ahmad and Hassan 2009 and Lozano and Pasiouras 2010). Since these activities are not shown on bank's balance sheet under current accounting standards and reserve requirements and deposit insurance premiums are not levied on OBS activities (Ahmad 2007). Even if the most frequently cited explanation for the growth of these activities is that they provide banks a way of avoiding reserve requirements and bank capital adequacy requirements and these regulations may provide incentives to go "off-balance sheet," non regulatory factors such as real GDP, international trade, bank size, profitability and credit risk are also important (Ahmad et al 2012; Ahmad 2007 and Ahmad and Hassan 2009).

Because of the above mentioned reasons, in recent years, there has been a widespread use of off-balance-sheet (OBS) activities in the banking system around the world. For instance, as Clark and Siems (2002) 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. Even if OBSA have been growing rapidly in recent years their extents are different across the world. Several empirical studies pertaining to OBS activities are available in the U.S. context, where there is a widespread of OBSA usage. However, OBS activities have also registered a significant presence in European banking and, to a lesser extent, in banking systems of Asian economies (Fung and Cheng 2004).

According to Ahmad (2007), the ratio of the aggregated OBS activities to aggregated total assets in Eastern Europe, South and Central America, Africa and The Far East and Central Asia equals 15%, 12%, 18%, 12% in 2005, respectively, compared to 60%, 63%, 41% for North America, NAFTA, and G7 countries, respectively. As part of the world financial system, there has been a shift in the sources of income of the Ethiopian commercial banks. The relative share of income from traditional banking activities has decreased and that of non-interest income has increased. For example according to Hailu (2010), Non-interest income has become a major source of income for banks, representing 67% of the total income earned by private banks. While private banks' aggregate net interest income showed a three per cent contraction.

Given the fact that OBS activities are being used extensively in almost all banking systems in the world, and given that each region in the world has its own political, technological, economic characteristics, as per the knowledge of the researcher less is known about OBS activities and their determinants in Ethiopian banks. This thesis aims to bridge this gap in the literature by investigating the determinants of OBS activities of banks in Ethiopia. The purpose of this paper is to examine and empirically test the practice of off-balance sheet (OBS) activities and determinants of OBS activities of Commercial Banks in Ethiopia.

1.2. Statement of the Problem

As mentioned above, in recent year's off-balance sheet activities (OBS) of commercial banks have increased and have received a great deal of attention from practitioners, regulators, and investors. According to Suning Zhang (2006) the increase of OBS financing arrangements and their "hidden" nature, as highlighted by the Enron scandal, has led to increased regulatory inspection and off-balance-sheet activities receive increased attention in the post-Enron world. Recognizing managers' incentives to engage in these transactions and the potential economic impact these transactions have on the firm has become increasingly important to regulators and investors.

Bank regulators are concerned because as the volume of off balance sheet items increased bank risks of OBS items could lead to sudden liquid squeezes or surprises loses (Hassan 1991). For example guarantees will increase banks' risk because the bank is obligated to make payments in future under certain circumstances, which may appear to be unfavorable to the bank (Hassan *et al.* 1993). In addition, off-balance sheet activities such as involvement in derivatives trading might increase interest rate and foreign exchange exposures as well as increase the volatility of the banks, which will indirectly, affect the banks' profitability in the long run (Karim and Sok Gee 2007). Regulators are also concerned because unlike balance sheet assets these potential obligations are not funded with balance sheet liabilities and not considered in determining a banks regulatory capital requirement. Therefore, conventional measure of financial healthy may not show an accurate picture of a bank conditions (Hassan 1991).

In addition to the risks associated with the off-balance sheet activities, off-balance sheet activities are changing the patterns of the structure of banks' income. Davis and Tuori (2000) found evidence of changes in the income structure from interest income to non-interest income, with rapid growth of off-balance sheet activities in most of the European Union countries. However, Stiroh (2004) found that bank's non-interest income is more volatile than the traditional income and there is little evidence of diversification effects of non-interest income on bank's revenue and profit.

Given the growing role of OBS activities and their determinants', to the best of the researcher's knowledge, there is no previous research work in Ethiopia concerning the factors that affect off balance sheet financing activities of banks.. Less is known about the determinants of OBS activities in the Ethiopian banking industry context. This paper bridges this gap in literature by testing within the Ethiopian banking industry context. It is a useful study, given competitions and the reduction in interest income, Ethiopian commercial banks began to compete through the usage of non-interest sources of income. To formulate public policy concerning use of off balance sheet items, it is necessary to understand the motivation behind off balance sheet decisions (Hassan 1991).

Most research on off-balance sheet financing practice has been dominated by studies conducted in developed countries such as USA and Europe. However, recent studies (see for example Ahmad 2007; Ahmad and Hassan 2009) have argued that the financial structure, institutional and legal environment of developed and developing countries are not comparable.

Therefore, it is clear that the determinants of bank's OBS activities and practice of OBS activities will be different from one region to another based on the distinguishing characteristics of each region. Ahmad (2007) indicated that bank size is statistically significant for Africa, the Middle East, NAFTA[2], the Far East and Central Asia, North America, and The European Union and statistically insignificant for G7[3], Western Europe, and Eastern Europe. He also suggested that regulatory factors are influencing OBS activities of banks in Africa and the Far East and Central Asia, but not banks in the rest. This is consistent with Ahmad *et al* (2012) and Ahmad and Hassan (2009) who rejected regulatory tax hypothesis in Jordan banking industry and banks in MENA countries respectively. This study is therefore, undertaken because of the motivation and derivers of off balance sheet activities across countries could be different and a theory that works in one country may not work in other. Thus, this thesis provides evidence concerning determinants of OBS activities of Ethiopian commercial banks.

1.3. Objectives

The general objective of this study is to examine the determinants of off-balance sheet (OBS) activities of Commercial Banks in Ethiopia during the period (2005 to 2012) by using the Panel data analysis.

The specific objectives are the following

- To investigates the extent to which Ethiopian commercial banks engage in off balance sheet activities;
- Examining the impact of bank size, loan, credit risk , efficiency and profitability on the off balance sheet activities of Ethiopian commercial banks;

[2] USA, Canada and Mexico
[3] Canada, USA, UK, France, Germany, Italy and Japan

- To see the effect of market concentration on Ethiopian commercial bank off balance sheet activities;
- To find out regulatory pressures on off-balance sheet (OBS) activities of Ethiopian commercial banks; and
- Examining the impact of economic growth, interest rate spread and inflation on Ethiopian commercial banks off balance sheet activities.

1.5. Hypotheses of the Study (HP)

In line with the research questions and objectives the following hypotheses were tested. Hypotheses of the study stands on the theories related to a bank's OBS activities that has been developed over the years by banking area researcher's and past empirical studies related to a bank's OBS activities. The results from the literature review (to be established in the next chapter) were used to establish expectations for the relationship of the different determinants and OBSA

HP1: *Bank size positively and significantly affects banks' off balance sheet activities.*

HP2: *Credit risk of bank negatively and significantly affects bank's OBS activities*

HP3: *Profitability of bank positively and significantly affects bank OBS activities.*

HP4: Loan positively and significantly affects bank OBS activities

HP5: *Efficiency positively and significantly affects bank OBS activities*

HP6: Market concentration negatively and significantly affects bank off balance sheet activities

HP7: *Capital adequacy requirement positively affects bank OBS activities.*

HP8: Reserve requirement positively and significantly affects bank OBS activities

HP9: *real gross domestic product positively and significantly affects bank OBS activities.*

HP10: Interest rate spread positively and significantly affects bank OBS activities

HP11: *Inflation negatively and significantly affects bank OBS activities.*

1.6. Scope and Limitation of the Study

The scope of the study is restricted to the assessment of factors affecting off balance sheet financing practices in all commercial banks registered by the NBE and that have at least eight years data i.e., 2005-2012. The determinants of OBS activities that used in this study are those frequently described in conventional banking studies and literatures. In addition, the study used bank sector data and countrywide macroeconomic data that is determined from National Bank of Ethiopia in order to define macroeconomic variables. In light of the limited research that exists on OBS financing practice and factors' driving their usage in banks within the Ethiopian context, the study is built on the current body of knowledge and studies conducted in other countries context. The OBS activities included in this thesis are guarantees, acceptance, letter of credit, performance bonds, trust fund, commitments, overdraft facilities and bill collection.

1.7. Significance of the Study

As described in the previous sections, this study is designed to investigate the OBS financing practice and derivers in Ethiopian banks. Therefore conducting research in this area will benefit shareholders and stakeholders of the banking sector.

The study would have benefit for Management, Government, Investors and practitioners and academicians by providing useful information about the impact of regulation in form of reserve requirement and capital adequacy requirement, OBS activities of commercial banks. Knowledge of these factors would be useful in helping the regulatory authorities and bank managers formulate future policies aimed at improving the banking service, profitability and structure of the Ethiopian banking sector. By establishing OBS activities and their determinants, bank regulators and management can gain better understanding of the issue. This study will help to enrich literatures on the subject matter by providing empirical evidence on the subject. The study could also be used as an initiation for those who are interested to conduct a detailed and comprehensive study regarding the topic. Thus it will serve as a reference for further study on related topics. Therefore, the research on the topic could be of great interest to management, shareholders, as well as for supervisory authorities and researchers and academicians.

1.8. Organization of the paper

The thesis was structured in five chapters as follows. Chapter one is introduction which, includes statement of the problem, research questions, objectives of the research, scope and limitation of the study. Chapter two include literature review about off balance sheet financing practice and determinants of off balance sheet activities. Chapter three is about research design and Methodology. This chapter includes data source, sampling techniques, data analysis and empirical model. Chapter four will be about discussion of results and findings. The last chapter is chapter five which is conclusions and recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Introduction

The commercial banking industry has changed dramatically over the past and these changes have documented widely in literatures. One important change is in the composition of bank businesses and product lines toward non-interest income activities such as OBSA[4]. In recent years, there has been a widespread use of off-balance-sheet (OBS) activities in the banking system around the world. The reasons for the rapid growth in bank's OBS exposures have much debated. However, in many literatures the determinants of OBS activities categorized in to bank specific factors, bank specific regulatory factors and macroeconomic factors.

Bank specific factors are those factors that are specific to the bank and affect OBS activities. Bank specific regulatory factors are regulations in the form of (reserve requirement and capital adequacy requirement) issued by regulators which determine the usage of OBS activities. Macroeconomic factors are determinants which affect all business activities of a given country. Therefore, these factors are reviewed in the following sections. Furthermore theories developed by scholars' on this area like, diversification hypothesis, regulatory tax hypothesis, moral hazard hypothesis and market discipline hypothesis are reviewed.

[4] Off balance sheet activities

2.2. Theoretical Review

Off-balance sheet (OBS) items are contingent assets and liabilities that may affect the future status of a financial institution's balance sheet (Saunders and Marcia 2004). Hassan *et al.* (1991) defined off-balance sheet activities as the banking products and practices that are not reflected in the on-balance sheet portfolio. Off-balance sheet activities are contingent commitments or contracts that generate income to a bank, but not captured as assets or liabilities under conventional accounting procedure. Contingent items may record in a bank's accounts as notes to balance sheet (Nachane and Ghosh 2002).

OBS activities of banks include issuing various types of guarantees, commitments, derivatives, and advisory or management functions (Khambat and Hirche 2002 as cited in Karim and Sok Gee 2007). In guarantees, the bank underwrites the obligations of the third party. In this context, the bank earns fee income without putting any asset or liabilities on its balance sheet. Guarantees include commercial letter of credit and standby letter of credit. A commercial letter of credit used to assist a firm in domestic and international trade. The bank's role is to provide a formal guarantee that it will pay for the goods shipped or sold if the buyers of the goods default on its future payments. Standby letters of credit cover contingencies that are potentially more severe, less predictable, or frequent, and not necessarily trade related (Ahmad 2007).

Commitment is a legally binding agreement taken by a bank on a future transaction in which the bank agrees to make a loan to a borrower at a fixed rate, over a specific period for a particular purpose (Khambata 1989). In this case, the bank sets aside funds to drawn by the borrower in future date. Derivatives are a contract that includes futures, forwards, options, and swaps. Banks can use derivatives contracts for trading purposes or hedging.

A number of theories in the academic literature have examined the issue of why banks engage in off-balance sheet activities. A number of competing hypothesis such as the diversification hypothesis, moral hazard hypothesis, regulatory tax hypothesis, and market discipline hypothesis off balance sheet activities have been developed in theoretical literature.

2.2.1. Diversification hypothesis

The diversification hypothesis implies that banks engage in OBS activities to diversify their asset portfolios in order to achieve within the firm diversification and to avoid the wrath of disappointed bank shareholders (Hassan 1991). This hypothesis argued that the desire to diversify their loan and investment portfolio have provided incentives for banks to use OBS activities. Davis and Tuori (2000) analyzed the structure of banks' income in Organization for Economic Cooperation and Development (OECD) countries for the period 1979-1995, using data on bank profitability. They found evidence of changes in the income structure from interest income to non-interest income, with rapid growth of off-balance sheet activities in most of the European Union countries.

2.2.2. Leverage Hypothesis or Moral Hazard Hypothesis

Leverage hypothesis states that fixed rate deposit insurance together with capital requirements provide incentives to increase financial leverage through OBS activities that are not subject to capital requirements. Thus, banks can increase financial leverage through using OBS activities (Hassan et al 2001). This hypothesis states that bank with high breakdown probabilities have greater moral hazard incentives and therefore more incentive to engage in OBS activities. This hypothesis argues that capital-constrained banks are likely to engage in more OBS items than less constrained banks. Thus, capital-constrained banks expected to issue more OBS items than other banks. Moreover, banks that are about to be unsuccessful will prefer to have OBS items that are out of accounting rules consideration which allow them to book income from these activities immediately, whereas income from the on-balance sheet items cannot be booked until the interest is earned (Hassan 2006). Therefore, banks with high failure probabilities have greater moral hazard incentives and have greater incentive to issue OBS items. Using a Logit analysis, Benveniste and Berger (1986, 1987) as cited in Ahmad 2007) found a positive relationship between a bank's leverage and the probability of a bank issuing an SLC[5]. They tested the moral hazard hypothesis by examining whether failing banks tend to issue more SLC and found that failing banks tend to issue a decreasing amount of SLC as bank failure approached. These authors interpreted these results to be inconsistent with moral hazard hypothesis.

[5] Stand by letter of credit

2.2.3. Regulatory Tax Hypothesis

The regulatory tax hypothesis states that OBS activities permit banks to avoid reserve requirements and capital requirements. The cost of meeting Capital requirements and holding non-interest bearing reserves raises the cost of funds for a bank above what non-bank institutions must pay. The greater the cost of funding the greater will be the incentives for banks to engage in OBS activities (Hassan 1991). This hypothesis states that regulatory taxes on on-balance sheet assets and liabilities, in the form of reserve requirements, deposit insurance premium, and capital requirements in excess of what banks would hold in the absence of regulation, will encourage banks to substitute off-balance sheet activities for on-balance sheet activities. This hypothesis shapes a positive relation between a bank's OBS activities and the regulatory taxes on on-balance-sheet assets and liabilities (Ahmad 2007). According to this hypothesis, a positive cross-sectional relationship exists between the probability of issuing OBS items and the leverage ratio, because highly leveraged banks would be forced to issue more OBS items to avoid increased capital requirements.

Santos (2011) investigated growth, drivers, and regulatory pressures on off-balance sheet (OBS) activities of Philippine commercial banks by using a panel data for the period 1998 to 2005. The author used dummy variable to see the regulatory pressure and he suggested that there is positive and significant relationship between regulation and overall OBS activities, and issuance of letters of credit. He supported the regulatory tax hypothesis. However, a number of studies failed to accept the regulatory tax hypothesis.

For example, Ahmad (2007) conducted a research on the determinants of Commercial Banks' Off-Balance Sheet Activities of selected nine world regions. The objective was to determine the motivation behind the usage of OBS activities in banking system in different regions of the world. They took nine regions, namely, North America, the European Union, Eastern Europe, the Middle East, Africa, the Far East, and Central Asia, NAFTA[6], South and Central America and G7[7] countries. The study covers during the period of 1995 to 2005. They argued that OBS activities are financial innovations in less developed regions. In opposite to the above research, they reject the regulatory tax hypothesis and suggest that bank regulations have no major role in OBS activities in the banking system for all the regions except Africa and the Far East and Central Asia. This result implies that bank regulation in the form of capital adequacy requirement affects OBSA usage of banks in Africa and Far East and Central Asia. This is consistent with Ahmad *et al* (2012) and Ahmad and Hassan (2009) who rejected regulatory tax hypothesis in Jordan banking industry and banks in MENA countries respectively.

2.2.4. Market Discipline Hypothesis

Market discipline hypothesis states that safer banks tend to issue a greater volume of OBS items than risky banks. The market discipline hypothesis argues that because OBS activities are uninsured dependent future claims that relate to other claims on the banks, banks with safer positions will engage in more OBS activities that will reduce the banks risk. The value of these claims to a customer increases with the safety of the bank, providing incentives for banks that issue OBS items to increase their safety and encouraging less risky banks to issue additional OBS items (Hassan 2006).

[6] USA, Canada, Mexico
[7] Canada, France, Germany, Italy, Japan, UK and USA

Hassan, Lai, and Yu (2001) studied the risk implications of Canadian banks' letters of credit by employing several market measures of risk using one-factor and multifactor models. They used a sample of six large chartered banks and the period of study extends from 1981 to 1994. Their results indicate that the various market measures of risk and letters of credit are negatively related. Moreover, banks with greater portfolio risk, (measured in terms of equity and asset risk), high leverage and interest rate risk, are less likely to issue letters of credit. They supported the market discipline hypothesis. This is consistent with the recent studies of Ahmad et al (2012); Ahmad and Hassan (2009) and Ahmad (2007) who indicated that large and profitable banks tend to issue more OBS activities by supporting the market discipline hypothesis.

2.3. Determinants of Commercial Banks OBS Activities: an Empirical Review

The determinants of off balance sheet activities have attracted the interest of academic researcher, bank management and bank supervisors since the knowledge of the bank specific factors , bank specific regulatory factors and macroeconomic factors is essential for various parties. The banking sector has been experienced worldwide major transformations in its operating environment. Both external and domestic factors have affected its structure and performance, and a number of determining factors could affect Commercial banks OBS activities. In most literature, off balance sheet activities of bank usually expressed as a function of bank specific factors, bank specific regulatory factors, and macroeconomic determinants. The following sections discuss these factors.

2.3.1. Bank Specific Factors

Bank specific factors are management controllable factors, which account for the inter-bank differences in OBS activities usage. These factors influenced by a bank's management decisions. A bank specific factor includes, size, loans, credit risk, efficiency and profitability.

Bank Size

Bank size is a potentially important quality indicator in estimating the likelihood of OBS activities. In most literatures, the effects of size on banks OBS activities represented in total asset. Ahmad (2012) indicated that **s**ize used to capture the fact that larger banks better placed than smaller banks in having highly qualified risk management and specialized staff. So that clients who are more likely to engage in OBS activities may not consider the small banks as a transaction vehicle since they believe that large banks are too big to fail. However, the impact of bank size on OBS activities could be of two side effects. On the one hand, a bank has to be of a certain size in order to get involved in OBS activities and get the benefits of the economies of scale. Thus, large banks utilize specialized management skills needed to allow credit through guarantees effectively. Additionally, the market may perceive that large banks are too-big-to-fail. On the other hand, as the bank, size gets bigger then probably the bank is more risk-diversified and there will be fewer incentives to engage in OBS activities. Because the larger the size of a financial institution, the greater may be its potential to diversify the asset portfolio (Hassan 2006).

Consequently, empirical evidence on the relation between the bank size and OBS activities is not conclusive. Koppenhaver (1989) studied the determinants of the OBS activities employing Logit models. They found that bank size is important factor for banks to engage in OBS activities. Avery and Berger (1991) separated banks into small and large banks in terms of their assets size, their results support the market discipline dominance for large banks while it is not for the small banks. Rogers and Sinkey (1999) find that bank size positively correlated with non-interest income. De Young and Hunter (2003) and De Young *et al*. (2004) also argue that bank size positively correlated with the degree of non-interest income expansion. According to them, relatively large banks make use of economies of scale and non-interest income is less important for smaller banks than for larger banks. Hassan (2006) and Ahmed *et al* (2012) found that banks' size affects OBS activities positively, which is consistent with the market discipline hypothesis. This implies that more creditworthy and safer bank will be more willing to use OBS activities because their guarantees are more valuable in the OBS guarantee market.

Nachane and Ghosh (2002, 2007), Ahmad and Hassan (2009), Santos (2011) and Ahmad (2007) found that bank's size has insignificant impact on the magnitude of OBS activities. This implies that large banks refrain from hedging derivatives because of moral hazard or because they perceive themselves as too-big-to-fail or both (Nachane and Ghosh 2002). It also suggests that lack of economies of scale with respect to OBS activities and the traditional banking activities are relatively safer for larger banks and there is less drive to engage in OBS activities.

In addition to this, the negative sign for bank size may indicate that as bank size increases then the total bank's risk will decrease, which implies that the need for OBS instruments will decrease (Ahmad 2007). The result is inconsistent with the market discipline hypothesis.

Credit Risk

Credit risk is the risk associated with the quality of a bank's earning assets, namely its loans. Banks' low quality assets (loans) cause high probability of future defaults that may reduce earnings and dividends; in other words, it will increase the bank's risk (Ahmad 2007). Credit risk defined as the provision for loan losses relative to total loans. Other things being equal, a higher credit risk may reflect a higher degree of expected loss in the loan portfolio (Hassan et al 2001). The predicted impact of the credit risk is negative, as the amount of the non – performing loans increase, the bank's creditworthiness decrease and that will decrease the amount of the OBS activities (Ahmad and Hassan 2009). In opposite to this there is an argument that increase in the loan loss provision amount may increase the usage of OBS activities. Because an increase in loan loss provision indicates, the credit risk for that bank is high and as a result, banks may use OBS activities as a risk management instrument to generate another income source to compensate for the bad loans loss. It believed that banks engage in these activities as a risk management instrument against credit risk. Therefore, an increase in the provision for loan loss amount might have a positive impact on the OBS activities. For example Shahida *et al* (2006) found that banks with high involvement in nontraditional activities are less risky and increased involvement in OBS activities lead to decreased loan loss provision level and volatility (Santos 2011).

Moreover, OBS activities have both risk reducing as well as risk increasing attributes and the net impact of the risk will depend on the ability to manage the risk resulting from engaging in these activities (Ahmad 2007). A negative effect of the loan loss provision on OBS activities are witnessed in literatures reviewed by this study such as Ahmad et al (2012); Ahmad (2007); Ahmad and Hassan (2009); and Elizabeth W. Cooper (2011) implying that banks do not use OBS activities to manage risk resulting from bad loans. Ahmad (2007) indicated that those banks with larger non-performing loans are disadvantaged in adopting guarantees (CLC[8]s and SLCs) due to a lack of credibility.

Loan and Advance

The impact of the loan ratio (the ratio of total loans to total assets) on the usage of OBS activities expected to be positive and significant. Because higher loan ratio increases interest rate risks, which will create an incentive for banks to hedge using OBS activities (Angbazo 1997 as cited in Ahmad 2007). In addition to this, a positive relation could be based on in the process of approving loans; because banks may get access to their customers' investment information that will facilitate the offer of relevant OBS risk management tools (Ahmad and Hassan 2009). Therefore, as banks extend more loans there will be more OBS activities as a result to the increased risk (Ahmad et al 2012). Ahmad (2007), Ahmad and Hassan (2009), Ahmad et al (2012) and Nachane and Ghosh (2002) found a positive and significant relationship between loan ratio and OBS activities, which indicates banks will participate more in OBS activities to reduce their risk resulted from loans**.**

[8] Commercial letter of credit

Profitability

Profitability is measured by return on asset (ROA) and according to previous researches a positive relationship between ROA and OBS activities are expected. This is because, profitability considered as a measure of the bank's creditworthiness as viewed by customers. Profitability will increase the customer valuation of a bank that persuades the customer to work with more profitable as opposed to less-profitable banks (Ahmad and Hassan 2009). Previous studies such as Ahmad and Hassan (2009); Ahmad et al (2012) and Ahmad (2007) indicated a significant positive relationship between OBS activities usage and profitability. This implies that OBS activities are profit driven and they increase with banks profit. Banks' customers prefer to deal with the profitable and more creditworthiness banks rather than the less profitable ones. This result is consistent with Joon-Ho Hahm (2008) who suggested that banks that are more profitable exhibit a higher non-interest income ratio. In contrast to this Elian (2013) found a negative relation between profitability and OBS activities in the GCC[9] countries.

Efficiency

In recent years banks have faced severe competition due to the lowering of barriers to entry and the globalization of the industry, which has forced them to reorganize (Athanasoglou *et al.,* 2005). They have been targeting high levels of efficiency and productivity growth both by keeping the labor force steady and by increasing overall output. Literatures said that efficient banks are better able to diversify their activities and channel funds effectively to economically viable activities in the economy, thereby providing greater stability for the economy.

[9] Gulf Cooperation council countries

However, the empirical study of Joon –Ho Hahm (2008) indicates that less cost-efficient banks with high cost-income ratios tend to diversify their revenue sources more aggressively by increasing their non-interest income shares. Banks with high-cost income ratios also exhibit higher non-interest income ratios

Market Concentration (HHI)

Market concentration is an industry specific factors and it is the number, size and distribution of banks in a particular market or country (Belayneh 2011). As indicated in other empirical studies market concentration is captured by Herfindahl-Hirschman (HHI) index which is the sum of the square of market share of the sample banks included in this particular study. Herfindahl-Hirschman Index (HHI) is the commonly used measure of market concentration. Market concentration could measures the degree of competition each bank faces in the market. Studies have shown that market concentration reduces competition (e.g. Sanya and Gaertner 2012, Grenade 2007). According to Claessnes et al (2004) competition in the financial sector is important since it affects the efficiency of the production of financial services, the quality of financial products and the degree of innovation in the sector.

Theoretically, higher market concentration implies more market power and less competition and hence is likely to be associated with less diversification of bank products toward OBS activities. On the other hand, when the concentration of the market reduced and the size and distribution of banks become more dispersed, the banking sector competition is expected to rise which lead banks to offer different financial products such as off balance sheet activities.

Empirical studies of Elian (2013) and Santos (2011) indicates a positive relation between market concentration and off balance sheet activities of banks. They argued that in highly concentrated banking industry there is a market power in which few banks has ability to expand businesses toward on-balance sheet and off-balance sheet businesses. While market power increases, the creditworthiness of a bank is expected to have a positive impact on the probability of banks to underwrite an OBS item. Whereas Roland and Maxwell 2006 said that greater competition diminishes the cost advantage banks had in acquiring funds and undercut their position in loan markets. As a result the profitability of traditional banking activities such as business lending and raising deposits would diminish. Thus banks forced to turn to new, non-traditional financial activities as a way of maintaining their position as financial intermediaries. Consistent with this the empirical studies of Moshirian et al (2011) found highly significant and negative relation between bank concentration and non interest income, indicating that banks in high concentration countries have lower levels of non-interest income activity. As competition increases, the level of non-interest income increases.

2.3.2. Bank specific regulatory factors

Commercial banks are strictly regulated by the central bank to prevent failures because of fraud, mismanagement etc. Commercial banks must comply with all pertinent laws, such as reserve requirements, liquidity requirements, capital adequacy requirements, laws relating to taxation and accounting procedures, etc. Governments regulate the banking sector to protect the depositor and reduce the banks' risk.

The main reason why regulations have imposed on the banking industry is that their healthy operation is critical for the overall economic stability and their failure has a huge negative signaling impact to the economy. Theoretical and empirical literature shows that banks engage in OBS activities to avoid certain regulatory costs such as minimum reserve and capital adequacy requirements. The following regulatory variables are reviewed from different banking area empirical studies.

Reserve requirement

Reserve requirement is measured as ratio of required reserves. According to previous literatures, reserve requirement expected to have a positive impact on OBS activities. This is because, according to Hassan (2006), non-interest bearing required reserves is a regulatory tax on banks, which motivates banks to use OBS activities in order to generate income since OBS activities are free of reserve requirement. The higher the required reserves, the greater the incentive that banks will engage in OBS guarantees (Hassan 2006).

Capital requirement

Capital requirement regulation is measured in capital adequacy ratio (CAR). Capital adequacy ratio is a measure of a bank's buffer capital, used to protect depositors and promote the stability and efficiency of financial systems (Ahmad and Hassan 2009). It believed that banks with risky assets have to hold higher capital relative to banks with less risky assets. Therefore, an argument can be made that OBS activities used to reduce capital requirements since off balance sheet activities are free from capital adequacy restriction.

It would thus appear that changes in capital requirements by regulators could have an effect on banks' decision to engage in OBS activities (Henderson and Elizabeth 2008). However, there are two possible effects of CAR on the diffusion pattern of OBS items. On the one hand, a higher CAR increases a bank's creditworthiness, which in turn will increase the incentives of the bank's customers to work with this bank's OBS risk management items. On the other hand, as a bank's CAR increases, the ability to assume risk increases, but the need for OBS products to hedge risk exposure may decrease (Ahmad 2007). High regulatory pressure with respect to capital implies low creditworthiness and can be translated into lower OBS activity. On the other hand, low regulatory pressure signifies comfortable capital position and banks become active supplier of OBS products. Previous empirical researches like Ahmad et al (2012), Ahmad and Hassan (2009), Ahmad (2007), Sinha (2006),Hassan (1991) and Koppenhaver (1989) found that regulatory variables were insignificant in determining banks' OBS activities and regulatory tax hypothesis is rejected.

2.3.3. Macroeconomic Factors

The practice of off balance sheet activities by banks can be affected not only by bank-specific factors, but also by macroeconomic factors that influence supply and demand conditions for banking services. It is fact that banks has a major role in economic activity of every country through provision of financial services. As banks influence economic activities, macroeconomic factors also affect the product mix of commercial banks in a given country. The following macroeconomic factors reviewed from different banking area empirical studies.

Economic Growth

Economic growth is measured by the real GDP. According to previous literatures, GDP growth expected to have a positive impact on banks' OBS activities. Real GDP captures the effects caused by fluctuations in general economic activity. There are two arguments about the impact of real GDP on usage of OBS activities. One argument is that, the demand for OBS products reacts positively to the business cycle due to transactions motive. Which means higher economic growth may lead to a greater demand for OBS activities. The other one is business risk decreases in economic boom periods that lead to less demand for OBS activities to hedge risk. An empirical study of Ahmad et al (2012), Ahmad (2007), Ahmad and Hassan (2009) and Nachane and Ghosh (2007) indicate a positive and significant relationship between real GDP and OBS activities. This implies that OBS activities follow the business cycle of the economy and it moves with the size of the economy. Therefore, it will increase when the economic growth is high and decrease when the economic is slowing down. This is because OBS activities are both risk management tool and income generating engagement (Ahmad and Hassan 2009). However, in contrast to this Joon –Ho Hahm (2008) suggested that banks in countries with slow economic growth tend to show higher noninterest income ratios.

Interest rate Spread

A positive relationship between interest rate spread measured by net interest margin and bank' OBS activities are expected. The positive relation indicates that as the uncertainty about future interest rates increases, the future interest rate risk will increase, pushing these banks to engage in more OBS activities as risk management instruments (Ahmad 2007).

A negative relation could also exist between interest rate and off balance sheet activities of banks. This indicates that banks engage in more traditional banking activities instead of OBS activities when margins are high, i.e., they will benefit from lending at the high long-term interest rates and borrowing at the low short-term rates (Ahmad 2007). Empirical results suggest that interest rate is at work in determining a bank's OBS activities. Ahmad (2007) found that there is a negative impact of net interest margin on banks' OBS activities in both The European Union, and Eastern Europe, suggesting that banks engage in more traditional banking activities instead of OBS activities. The same author found that net interest margin is positively affected off balance sheet activities of banks in Africa, North America and in G7. This suggests that as the uncertainty about future interest rates increases, the future interest rate risk will increase, pushing these banks to engage in more OBS activities as risk management instruments. In contradict to this, Ahmad and Hassan (2009) found that interest rate spread has a statistically insignificant impact on OBS activities of MENA commercial banks, suggesting that banks do not value the uncertainty about future interest rates when they make decisions on OBS contracts.

Inflation

Inflation is another important macro-economic condition that may affect bank OBS activities. Inflation had been one of the least researched issues in earlier bank OBS studies. Inflation expected to affect bank OBS activities negatively. Ahmad (2007) using consumer price index (CPI) as a proxy for inflation indicated that during high inflation purchasing power of consumer would decrease.

As a result aggregate demand in the economy decreases, this in turn reduces all the trade transactions domestically and internationally; negatively affecting OBS activities. This is consistent with Joon-Ho Hahm (2008) who argued that low-inflation environment facilitate the non-interest income expansion of commercial banks. He suggested that low inflation shifts the corporate financing and saving behavior of firms and households toward capital markets, where banks can get opportunities for capital related business such as income from fund sales, asset backed securitization and trading of securities and derivatives.

2.4. Summary and Gap in the Existing Literature

This chapter reviewed the literature on determinants of off balance sheet financing. A number of theories and studies in the academic literature that have examined the issue of why banks engage in off-balance sheet activities have been reviewed in the above sections. A number of competing hypothesis such as the diversification hypothesis, regulatory tax hypothesis, moral hazard hypothesis, and market discipline hypothesis off balance sheet activities were reviewed. First, the diversification hypothesis implies that bank engage in OBS activities to diversify their asset portfolios in order to achieve within the firm diversification. The regulatory tax hypothesis states that OBS activities permit banks to avoid reserve requirements and capital requirements. The moral hazard hypothesis states that banks with high breakdown probabilities have greater moral hazard incentives and therefore more incentive to engage in OBS activities. Finally, the market discipline hypothesis argues that banks with safer positions will engage in more OBS activities that will reduce the banks risk.

The findings of prior empirical studies have provided varying evidence related to the determinants of bank OBS activities. For instance, Ahmad (2007) have studied the determinants of banks OBS activities of nine world regions and provided evidence that use of OBS activities vary across the regions and the determinants as well. For example he indicated that bank size is statistically significant for six regions (Africa, the Middle East, NAFTA, the Far East and Central Asia, North America, and The European Union) and statistically insignificant for three regions (G7, Western Europe, and Eastern Europe). The negative sign for bank size suggests that as bank size increases then the total bank's risk will decrease, which implies that the need for OBS instruments will decrease. He also suggested that regulatory hypothesis works only in Africa and Far East and Central Asia from the nine regions of the world. Beside, Santos (2011) using a panel data for the period 1998 to 2005 in Philippines commercial banks provided evidence that regulatory factors affect banks' OBS activities by supporting regulatory tax hypothesis.

Therefore, these empirical studies indicate that OBS financing practice and derivers of OBSA usage is different across countries, because countries are different in level of economic development, financial structure, and legal environment (Ahmad 2007). The contradictory conclusions that results from the previous researches across countries call for an investigation to be conducted in the area using developing countries data. In the context of Ethiopia as to the knowledge of the researcher there is no study conducted on the determinant of OBS activities in the Ethiopian banking industry. Therefore, this study will fill the gap by examining the determinants of OBS activities in the context of Ethiopian banking industry.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Introduction

The preceding chapter presented the review of the existing evidence on off balance sheet financing practice and factors affecting their usage. The results from a review of the literature are used to establish expectations for the relationship of the different determinants and OBSA. Therefore, this chapter provides the detail steps and procedures used to conduct the study. It describes the types of methods selected for data collection and analysis and the reasons for why these methods are chosen. The chapter includes the research approach; research hypothesis and methods adopted including the data collection tools and methods of data analysis.

3.2. Research Approach

As noted in Creswell (2009) there are three approaches that are used in conducting business and social research. These are quantitative, qualitative and mixed methods approach. Quantitative research is a means for testing objective theories by examining the relationship among variables (Creswell 2009). On the other hand, qualitative research approach is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem with intent of developing a theory or pattern inductively (Creswell 2009). Qualitative research approach is one in which the investigator often makes knowledge claims based primarily on the multiple meanings of individual experiences, socially and historically constructed meanings, participation in issues, collaboration or change oriented with an intent of developing a theory (Creswell 2003).

Finally, mixed methods approach is an approach to inquiry that combines or associates both qualitative and quantitative forms (Creswell 2009). According to this thesis, quantitative research approach is used to measure the responsiveness of off balance sheet activities to different elements. The authors collected numeric data of variables (both dependent and independent) from financial reports of eight consecutive years. Thus, the quantitative approach is employed in analyzing the collected data so as to analyze those characteristics of a bank and macroeconomic factors that appear to affect the off balance sheet activities of banks. Its advantage of being able to make generalization for population based on finding from the sample make quantitative approach appropriate for this study.

3.3. Sample Selection

For the study, the target population would be all commercial banks registered by NBE and under operation in the country currently. Currently, there are 18 banks in Ethiopia, in which three of them are public and the rest 15 are private banks. The sample size is eight banks, which are around 40% of the total population. The sampling technique used is purposive sampling. Purposive sampling may be defined as selecting units based on specific purposes associated with answering a research questions or it is a type of sampling in which particular settings, or events are deliberately selected for the important of information they can provide that cannot be gotten as well from other choices (Lund Research Ltd 2012). Purposive sampling is used because; it allows focusing on particular characteristics of a population that are of interest, which will best enable to answer research questions. Therefore, the researcher used purposively eight banks from the eighteen banks in the country for study period of 2005 to 2012.

Banks that are newly established are purposely dropped out from the sample because they are unsuitable for the sampling study and they do not fit the study period.

Table 3.1 List of Public and Private Commercial Banks in Ethiopia

Commercial Banks	**Establishment year**
Public Bank	
Commercial Bank of Ethiopia	1963
Construction & Business Bank	1975
Private Banks	
Abyssinia Bank	1996
Awash International Bank	1994
Dashen Bank	1995
Nib International Bank	1999
United Bank	1998
Wegagen Bank	1997

Source; *National Bank of Ethiopia and respective bank website*

3.4. Data and Data Sources

The study used secondary sources of data. The secondary data were annual report of the banks and economic data from National bank. The study period covers from 2005 to 2012 G.C. The researcher believes the period of eight years would be sufficient to track growth of OBS activities for the balanced panel data.

If too long a period is chosen, the bank's specific OBS activities becomes less meaningful because of changes in management and other events. De Young (1997) showed that a six-year time frame reasonably balanced these concerns and Santos (2011) also used eight years data.

3.5. Hypothesis development

According to Patricia (2008) hypothesis is a claim or statement either about a value of a single population characteristic or about the values of several characteristics. It is a tentative statement of fact that is yet to be verified by the researcher. In this study in order to address the research questions about determinants of OBSA, the following hypotheses are developed.

3.5.1. Dependent variable

In investigating the determinants of OBS activities of banks, off balance sheet activities is dependent variable;

Off balance sheet activities: are activities which are not formally reflected on financial statements. These are largely loan commitments and contingencies that generate income and/or hedge risks. Off balance sheet activities are measured in different ways by different papers. For example, James Nguyen (2011) in his paper entitled Market Concentration and other Determinants of Bank Profitability, measures the effect of Off-Balance-Sheet (OBS) activities as the ratio of other (noninterest) income to total assets. However, most literatures such as Ahmad et al (2012), Ahmad (2007), Ahmad and Hassan (2009) and Nachanne and Ghosh (2007) among others use the ratio of OBS activities to total asset (defined as total asset + OBS activities) a proxy for OBS activities.

Therefore, this study attempts to measure OBS activities as OBS activities to total asset, because non-interest income may overestimate the amount of OBS, since fees and commissions are drawn also from on-balance sheet activities.

3.5.2. Independent variable

In this study, the independent variables are variables that are used as a determinant of OBSA of the sample Ethiopian commercial banks. This subsection describes the independent variables that are used in the econometric model to estimate the dependent variable. Following prior researches towards the determinants of banks OBS activities, the independent variables are classified into bank-specific, bank specific regulatory and macroeconomic variables (Ahmad et al 2012).

Bank Specific Variable

The following part of this particular section clearly presents the bank-specific variables that are used in this particular study.

Size

In different studies, different researchers use different measurements of bank size such as number of employees and total assets of a bank. However, most of the researchers use the log value of total assets as a measure of size of banks. Therefore, this thesis uses the logarithm of total asset to capture the potential non-linear effect of size similar to Ahmad et al. (2012) and Ahmad and Hassan (2009). As the literature review pointed out, academic research is mixed regarding the relationship between the bank size and bank OBS activities. According to market discipline theory banks with high total asset tend to issue more OBS activities. Larger banks are likely to be more diversified and fail less often.

Opposed to the market discipline hypothesis empirical researches such as Nachane and Ghosh (2002), Ahmad (2007) and Ahmad and Hassan (2009) suggest that large bank do not take part in more OBS activities. Because as the bank size gets bigger then probably the bank is more risk-diversified and there will be fewer incentives to engage in OBS activities. Whereas the empirical studies of Elian (2013) and Ahmad et al (2012) found that bank size positively affects banks off balance sheet activities. They suggested that large banks have more chances to employ high skilled and well trained employees and be more efficient in providing higher quality services, which enable them to issue more OBS activities. In addition to this large banks may have well developed and wide spread networks with access to large clients who are likely to be asking for OBS products (Elian 2013). Hence, the expected sign of the coefficient of bank size is positive based on the market discipline hypothesis.

Bank size positively and significantly affects banks off balance sheet activities.

Credit risk

Credit risk is one of the types of risk for banks; credit risk is estimated by the ratio of provision for loan losses to total loans. Based on the market discipline hypothesis more credit risk is associated with less OBSA involvement of banks. Following prior research of Ahmad et al (2012), Ahmad (2007) and Ahmad and Hassan (2009), negative relationship for credit risk and bank OBS activities is hypothesized. There are two different opinions on the association between OBS and credit risk. First view implies a negative significant relation that is consistent with market discipline theory. Banks with less credit risk tend to use more OBS activities. Second view points to a positive significant relation; arguing that banks with more credit risk will increase OBS activities.

Thus, credit risk may have a mixed effect on the OBS activities usage. Most of the previous studies, confirm the negative relation, (Ahmed et al.2012).

Hence, credit risk is expected to have a negative impact on OBS activity usage based on the market discipline hypothesis theory.

Credit risk of banks negatively and significantly affects OBS activities of banks'

Loan

Loan has a positive impact on OBS activities of banks. Previous studies of Ahmad et al (2012), Ahmad (2007), Ahmad, and Hassan (2009) among others found a positive relationship between loan and OBS activities. This shows that a higher loan ratio will increase the interest rate risk, which will create an incentive for banks to hedge using OBS activities. Therefore, in this study similar to previous studies the ratio of total loan to total asset as a proxy to measure effect of loan is used. Consequently, the researcher formulates the following hypothesis:

Bank loan positively and significantly affects bank OBS activities

Profitability

The independent variable as determinant of banks OBS activities, profitability of commercial banks is measured by ROA. There are many different ways to measure profitability, in this study ROA is used to measure profitability, to see the impact of profitability on the OBS activities of banks like Elian (2013) and Joon-Ho Hahm (2008).This studies indicated that there is a positive and significant relationship between profitability and OBS activities of banks.

Profitability is considered as a measure of the bank's creditworthiness as viewed by customers. Thus OBS activities are profit driven and it is in this regard that the next hypothesis is formulated.

Bank profitability positively and significantly affects bank OBS activities.

Efficiency

The quality or efficiency of management is proxied by the cost to income ratio (EF), which is defined as the operating cost necessary to generate one unit of gross income. An increase in this ratio implies a decrease in the efficiency or quality of management. Banks operating with low levels of efficiency have higher costs largely due to inadequate credit monitoring and inefficient control of operating expenses (Franco et al 2010). Franco et al (2010) found a negative statistically significant link between cost efficiency and income diversification in European banks and Joon –Ho Hahm (2008) indicates less efficient banks tend to diversify their revenue sources more aggressively by increasing their non-interest income shares. Therefore in this thesis, a positive sign is expected since efficiency is low in Ethiopian banking industry.

Bank efficiency positively and significantly affects bank OBS activities

Market concentration

In this study the researcher used the most popular measure of market concentration namely, Herfindahl–Hirschman index (HHI) to measure market concentration. HHI is measured by adding up the squares of the market shares of all banks, and mathematically can be expressed as follows: HHI= $\sum_i^N$ Where: *Zi* is the deposit of bank *i* and *ZT* is the total deposit of the commercial banking sector.

The criteria of concentration level by the US Department of Justice are as follows: HHI more than 0.18 is highly concentrated, HHI between 0.18 and 0.1 is moderately concentrated, and HHI less than 0.1 is un-concentrated. The more concentrated the industry is, the higher is the value of index and lower the extent of competition.

Highly concentrated market lacks proper competition and when the concentration of the market reduced and the size and distribution of banks become more dispersed, the banking sector will be competitive. Empirical studies of Elian (2013) and Santos (2011) indicates a positive relation between market concentration and off balance sheet activities, indicating that a bank with more market power would be categorized as more creditworthy, prompting such banks to underwrite an OBS item. Whereas Moshirian et al (2011) found banks in high concentration countries have lower levels of non-interest income activity. Therefore, in this study the researcher hypothesizes a negative association between market concentration and bank OBS activities in Ethiopia.

Market concentration negatively and significantly affects bank's OBS activities.

Bank specific regulatory variables

This subsection discusses the regulatory variables separately from bank-specific variables as far as this variable is to some extent external. That means managers cannot change the variable immediately like that of bank-specific variables.

Reserve Requirement

The regulatory tax hypothesis states that a more regulation in the form reserve requirement will motivate banks to substitute on balance sheet activities by off balance sheet activities. This is because reserve requirements are not levied on OBS activities.

Currently according, to National bank of Ethiopia Directives NO SSB/46/2012; any bank operating in Ethiopia shall at all times maintain in its reserve account 10% of all birr and foreign currency deposit liabilities held in the form of current deposit, saving deposit and time deposit. Previous studies of Hassan (2006) found a positive relationship between reserve requirement and OBS activities.

Therefore, in this study similar to Tarsida et al (2002) the ratio of reserve as a proxy to reserve requirement is used. Consequently, the researcher formulates the following hypothesis:

Reserve requirement positively and significantly affects bank OBS activities.

Capital Adequacy Requirement

(CAR[10]) is a ratio that regulators in the banking system use to watch bank's health, specifically bank's capital to its risk. Regulators in the banking system track a bank's CAR to ensure that it can absorb a reasonable amount of loss. Regulators in most countries define and monitor CAR to protect depositors, thereby maintaining confidence in the banking system. It is a measure of how much capital is used to support the banks' risk asset. According to the national bank directives named Minimum Capital Requirement for Banks (No. SBB/ 50/2011), all licensed banks shall at a minimum maintain capital to risk weighted assets ratio of 8% at all times. This paper used CAR as proxy for capital requirements regulation. Previous empirical researches like Ahmad et al (2012), Ahmad and Hassan (2009), Ahmad (2007), Sinha (2006), Hassan (1991) and Koppenhaver (1989) found that capital adequacy ratio is negatively related with bank OBS activities. However in this thesis a positive relation is expected based on regulatory tax hypothesis theory.

[10] Total capital/ Risk weighted asset

Capital adequacy requirement positively and significantly affects bank OBS activities.

Macroeconomic variables

The macroeconomic variables are external for banks managers and uncontrollable. The growth of real gross domestic product, interest rate and the inflation rate are selected as possible macro-economic variables that can affect bank profitability in this study.

Economic Growth (Real GDP)

An improvement in economic condition can motivate banks to use more OBS activities because of the transaction motive. The empirical evidence on the relationship between RGDP and bank OBS activities shows a significant and positive relationship. Ahmad et al (2012), Ahmad and Hassan (2009), Ahmad (2007) and Nachane and Ghosh (2007) found that RGDP has a significant positive impact on the usage of the OBS contracts, which suggests that OBS activities follow the business cycle of the economy and it move with the size of the economy. Thus, the variable is expected to exhibit positive relationship with bank OBS activities.

Real gross domestic product positively and significantly affects bank OBS activities.

Interest Rate spread

Interest rate spread is another macroeconomic variable that can influence the use off balance sheet activities of commercial banks. In this thesis like that of Ahmad (2007) net interest margin as a proxy for the interest rate spread is used. Interest rate are used to measure the availability of investment opportunities and the real borrowing cost, which will influence demand for bank lending .

Empirical studies indicate that interest rate spread positively/negatively affects off balance sheet activities of banks (Ahmad 2007; Joon-Ho Hahm 2008).

In thesis, the expected sign of interest rate is positive because according to World Bank the interest rate spread in Ethiopian banks is low and as result banks may go for additional source of income.

Interest rate spread positively and significantly affects bank OBS activities.

Inflation

Another important macro-economic condition which may affect bank OBS activities is inflation. In this regard, Ahmad (2007) suggests that increases inflation may affect OBS activities negatively as it will affect the purchasing power of the economy and then the saving level in the economy and all the banks activities in general (on and off balance sheet). This variable (*INF*) is measured by the growth rate of the inflation rate.

Thus, the expected sign of the inflation is negative.

Inflation rate negatively and significantly affects bank OBS activities.

Table 3.2 Empirical Model Variables: This table presents the variables of the empirical model of determinants of banks off balance sheet activities, their proxies and predicted coefficients sign.

Variable	Measure	Notation	Expected sign
Size	Natural log of total asset	LTA	+VE
Credit Risk	Provision for loan loss/Total Loan	LLP	-VE
Loan	Total loan/ total asset	TLTA	+VE
Profitability	Net profit before tax/total assets	ROA	+VE
Efficiency	Cost/ income	EFF	+VE
Market Concentration	Herfindahl–Hirschman index	HHI	-VE
Reserve requirement	Reserve ratio	RQ	+VE
Capitaladequacy requirement	Total capital/risk weighted asset	CAR	+VE
Economic Growth	Real GDP growth rate	GDP	+VE
Interest rate spread	Net interest income/ total asset	NIM	+VE
Inflation	Inflation rate	INFL	-VE

3.5. Method of Data Analysis

In this study, panel data and descriptive statics, inferential statics and multiple regressions are used to examine the off balance sheet financing practice and factors affecting OBSA of commercial banks in Ethiopia. Panel data is used because it has the advantage of giving more informative data as it consists of both the cross sectional information, which captures individual variability, and the time series information, which captures dynamic adjustment. In short, panel modeling helps to identify a common group of characteristics while, at the same time, taking the account the heterogeneity that is present among individual units.

The collected panel data were analyzed using descriptive statistics, correlations and multiple linear regression analysis. The descriptive statistics was used to quantitatively describe the important features of the variables using mean, maximum minimum and standard deviations. The correlation analysis was used to identify the relationship between the independent and dependent variables. The correlation analysis shows only the degree of association between variables and does not permit the researcher to make causal inferences regarding the relationship between variables (Marczyk et al. 2005). SPSS 16 is used in thesis to see the correlation between dependent and independent variables. Therefore, multiple panel linear regression analysis was also used to test the hypothesis and to determine the relative importance of each independent variable in influencing OBSA. The multiple linear regressions model run, and thus OLS conducted using EVIEWS 6 econometric software package, to test the casual relationship between the banks OBSA and their potential determinants and to determine the most significant and influential explanatory variables affecting the OBSA of Ethiopian banks. The rational for choosing OLS is as noted in Petra (2007) OLS is advisable to use when the following holds; the cross section is small and the time dimension is short. Therefore, since both the above facts hold true in this study it is rational to use OLS.

Regression Model

To examine factors that affect off balance sheet activities of commercial banks in Ethiopia, the following regression equation is estimated to explore potential determinants of OBS activities of the banking industry of Ethiopia.

$$\mathbf{OBSA\ it = \alpha + \beta 1TAit + \beta 2LLPit + \beta 3TLTA + \beta 4ROAit + \beta 5EFF + \beta 6HHIit + \beta 7CARit + \beta 8RQit + \beta 9GDPit + \beta 10NIMit + \beta 11IFLit + \varepsilon it}$$

where i = 1,2,3,….,N denotes the number of banks and t = 1,2,3,…T denotes the number of time periods. The dependent variable, **OBSA it** denotes the off balance sheet activities of bank i at year *t*. OBSA is measured as the ratio of off balance sheet activities to total asset. In this model α is a constant term, TA is total asset proxy for size, LLP is a ratio of provision for loan loss to total loan proxy for credit risk, TLTA is the ratio of total loan to total asset proxy for loan, ROA is return on asset proxy for profitability. EFF is the ratio of cost to income ratio proxy for efficiency, HHI is a Herfindahl-Hirschman Index for market concentration, RQ is reserve requirement ratio, proxy for regulation, CAR is capital adequacy requirement proxy for regulation, GDP is real gross domestic product growth rate proxy for economic growth, NIM is interest rate margin proxy for interest rate spread, INFL is inflation rate and Ɛ is error term.

CHAPTER FOUR

4. RESULT and DISCUSION

4.1. Introduction

This chapter explains and discusses the results of findings based on the analysis done on the data collected. In this section, data collected is to be analyzed so as to present findings and draw conclusions. The study explains the factors that influence the use of off balance sheet activities of selected commercial bank in Ethiopia. The researcher used descriptive statistics analysis and regression to data analysis. The descriptive statistics summarizes the main features of the study variable such as mean, maximum, minimum and standard deviation. In this research the researcher used multiple regression analysis which is used to test whether one or more independent variables influence a dependent variable and if this effect is positive or negative. The empirical evidence on the determinants of Ethiopian commercial banks' off balance sheet activities is studied based on 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 2005 up to 2012 and a cross section segment which considered eight Ethiopian commercial banks, that, includes Commercial Bank of Ethiopia, Construction and Business Bank, Awash International Bank, Dashen Bank, Bank of Abyssinia, Wegagen Bank, United Bank and Nib International Bank.

4.2. Off balance sheet Usage

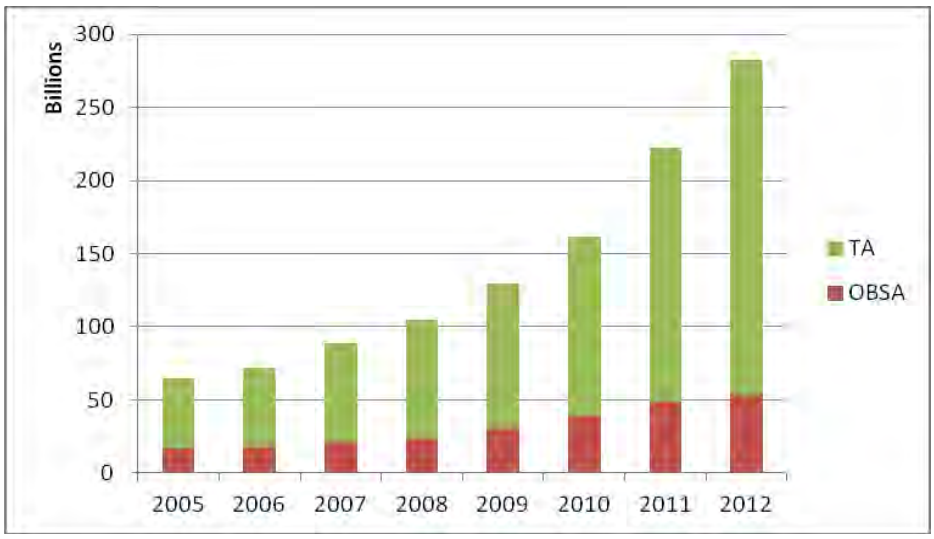
Ethiopian banking system has also engaged in the OBS activities like all other countries. The Ethiopian banking system has experienced an encouraging growth of off-balance sheet activities since the last few years. In recent years, an exposure of Ethiopian banks to off-balance sheet operations which include, guarantees, acceptance, letter of credit, performance bonds, trust fund, commitments and bill for collection are increasing in volume over a time period. Table 4.1 provides the trend in OBS activities in Ethiopian selected commercial banks during the period spanning from 2005 to 2012. It is shown that the use of off-balance sheet activities is growing over the years with increasing amount of money being utilized in this area. As it is shown in table 4.1 Total off-balance sheet exposure of selected commercial banks has increased from 16,531,930,785 birr in 2005 to 53,717,116,747 birr in 2012.

Table 4.1 Aggregated banking data of OBS activities

Year	Total Asset	Off balance sheet(OBS)	(OBS/TA) %
2005	48,242,246,218	16,531,930,785	0.20608
2006	54,572,920,580	17,308,874,234	0.220545
2007	67,949,364,439	20,509,335,788	0.214135
2008	80,954,971,221	23,751,143,747	0.227937
2009	98,922,791,271	30,673,234,572	0.281583
2010	122,613,174,206	39,347,353,623	0.279193
2011	173,649,961,956	48,397,643,861	0.246864
2012	229,045,482,654	53,717,116,747	0.234526

Source: Financial statement of banks and own computation

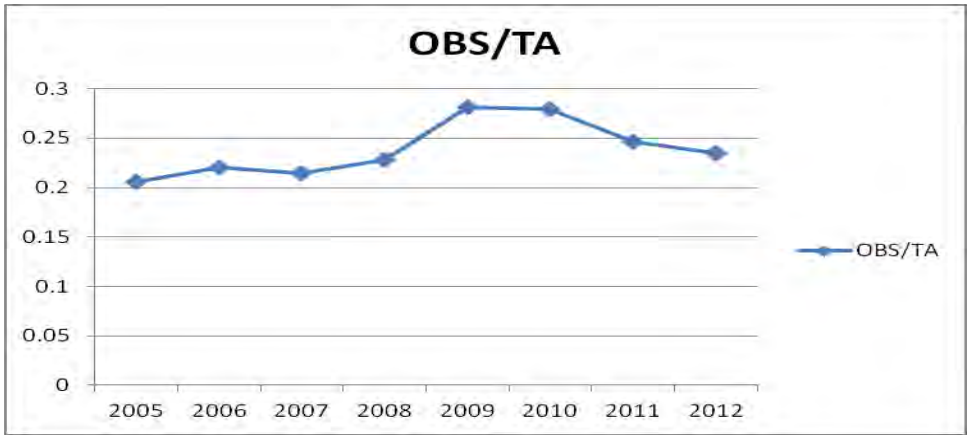
Figure (1): OBS and Total Assets over time



Source: Financial statement of banks and own computation

Figure 1 shows the growth of off-balance sheet activities and total asset of commercial banks in Ethiopia since 2005. The figure clearly illustrates that the growth of off-balance sheet activities is less than the growth of total assets of the commercial banks in Ethiopia during the period 2005-2012. This clearly indicates that off-balance sheet activities growth in Ethiopian banking system is not as that of other countries. For example according to Ahmad et al (2012) the notional value of the OBS activities in Jordan banks was grown from $18.86 billion in 2005 to $32.02 billion in 2010 but in Ethiopian case in 2005 it was 16.5 billion birr and it grown to 39.3 billion birr in 2010. Thus the limited usage of the OBS activities in the Ethiopian banking industry indicates that the banking sector in Ethiopia still relies on the traditional banking businesses as the main source and use of funds.

Figure 2: **OBSA/TA, over time Ratio**



Source: Financial statement of banks and own computation

Figure 2 above indicates that the ratio of off balance sheet activities to total asset is increasing, during the period of the study except a decrease in 2011 and 2012. This does not mean that off balance sheet activities are decreasing in 2011 and 2012 but it show the amount of total asset is far greater than OBS activities amount. The ratio of off balance sheet activities to total asset of Ethiopian commercial banks is low compared to other countries. For example according to Santos (2011) OBS activities account 65% of total asset in 2005 in Philippines commercial banks where as in Ethiopian banks it was 20%.

4.3. Diagnostic test (Test results for the classical linear regression model assumptions)

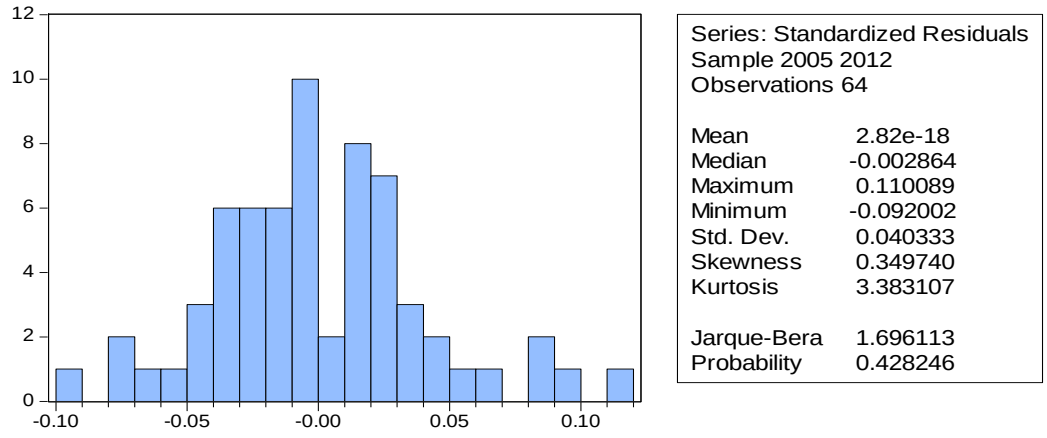
But before rushing towards data analysis and presentation the researcher made a diagnostic test for the data which collected from the banks.

Normality test

One of the assumptions of linear regression analysis is that the residual are normally distributed, at the mean of zero and standard deviation of one. Chris Brooks (2008) noted that in order to conduct hypothesis test about the model parameter, the normality assumption must be fulfilled.

Therefore, the researcher used graphical methods of testing the normality of data as shown below. From figure 4 below, it can be noted that the distribution is normal curve, indicating that the data confirms to the normality assumption.

Figure 3 Normality test for residuals



Source: Financial statements of banks and own computations

If the residuals are normally distributed around its mean of zero the histogram is a bell-shaped. The shape of the histogram as shown above in figure 4 revealed that the residuals are normally distributed around its mean of zero. Here in this model the mean is approximately 0 and the coefficient of kurtosis was close to 3, and the Bera-Jarque statistic had a P-value of 0.42, which was greater than 0.05 implying that the data were consistent with a normal distribution assumption. So the model is normally distributed.

Test for Hetroscedasticity

The other important assumption for classical linear regression model is that variance of the residuals is homogeneous across levels of the predicted values, also known as homoscedasticity. If residuals don not have a constant variance (not homoscedastic), they are said to be Hetroskedastic (Chris Brooks 2008).

In this study as shown in table 4.2 both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05.

Table 4.2 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

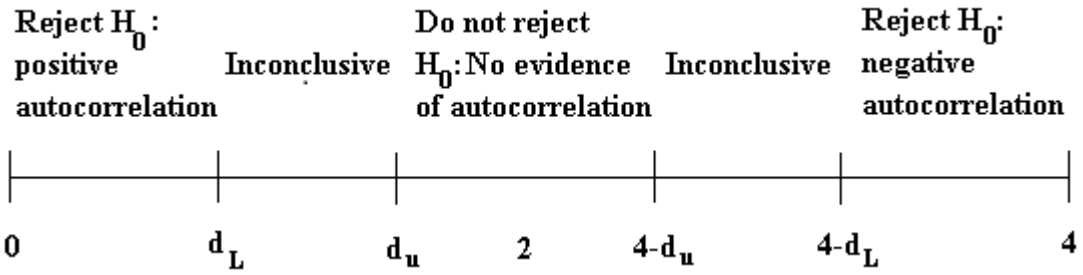
F-statistic	1.740187	Prob. F(11,52)	0.0902
Obs*R-squared	17.22036	Prob. Chi-Square(11)	0.1015
Scaled explained SS	8.667914	Prob. Chi-Square(11)	0.6525

Source: Financial Statement of Banks and own computation

Test for autocorrelation

The Durbin-Watson test statistic value in table 4.6 was 1.94. To empirically analyze factors affecting bank off balance sheet activities in Ethiopia 64 (8*8) observations were used in the model. Moreover, there were 11 independent variables and an intercept term in the model. Therefore, the relevant critical values for the test are dL= 1.23, dU = 2.006, i.e., for 64 observations and 11 independent variables. The Durbin-Watson test statistic of 1.94 is almost between the upper limit (dU) and the lower thus the null hypothesis of no autocorrelation is within the inconclusive region of the number line and thus there is no evidence for the presence of autocorrelation. It is possible since the Durbin-Watson Statistics (D-W stat.) from the regression result before analysis shows that 1.94 which is approaching to 2 and hence no evidence for the presence of autocorrelation.

Figure 4: Rejection and non-rejection regions for Durbin-Watson Test



Test of multicollinearity

In order to examine the possible degree of multicollinearity among the explanatory variables, correlation matrixes of the selected explanatory variables were presented in table 4.3. Usually the multicollinearity exists if the correlation between two independent variables is more than 0.8 (Gujarat 2004). As shown in table 4.3 there were fairly low data correlations among the independent variables except a correlation of 83.9 between reserve requirement and market concentration. Low correlation coefficients indicate that, there is no problem of multicollinearity for this study.

Table 4.3: Correlation matrixes of independent variables

	SIZE	LLP	TLTA	ROA	EFF	HHI	CAR	RQ	GDP	NIM	INFL
Size	1.000										
LLP	-0.006	1.000									
TLTA	-0.78	-0.188	1.00								
ROA	-0.096	-0.424	0.164	1.000							
EFF	-0.327	0.145	0.025	-0.573	1.00						
HHI	-0.224	0.054	0.229	-0.406	0.104	1.000					
CAR	-0.045	-0.276	-0.195	0.498	0.027	-0.216	1.000				
RQ	0.333	-0.118	-0.359	0.362	-0.069	-0.839	0.331	1.000			
GDP	0.319	0.169	0.296	-0.186	0.013	0.704	-0.308	-0.672	1.000		
NIM	-0.442	-0.175	0.544	0.308	-0.167	0.001	0.243	0.072	-0.055	1.00	
INFL	0.185	-0.123	-0.119	-0.077	0.031	-0.03	0.222	0.278	-0.539	0.20	1.00

Source: Financial statements of banks, NBE reports and own computation

4.4. Descriptive statistics of the study variables

The table below shows the descriptive statistics of the dependent variable, OBSA and eleven independent variables. Table 4.4 presents the outcomes of the descriptive statistics for main variables involved in the regression model. The total observation for each dependent and explanatory variable was 64. Moreover, the table also shows the mean, standard deviation, minimum, median and maximum values for the dependent and independent variable.

Table 4.4 Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
OBSA	0.1709	0.1637	0.543	0.0066	0.1182	64
SIZE	22.49	22.38	25.462	20.794	1.0074	64
LLP	0.0558	0.0404	0.211	0.0184	0.0416	64
TLTA	0.48	0.457	0.705	0.193	0.128	64
ROA	0.038	0.039	0.056	0.0082	0.0068	64
EFF	0.505	0.483	0.9202	0.352	0.147	64
HHI	0.427	0.416	0.505	0.352	0.0564	64
CAR	0.194	0.172	0.383	0.08	0.0732	64
RQ	0.113	0.15	0.15	0.05	0.042	64
GDP	0.1126	0.113	0.126	0.1	0.0073	64
NIM	0.0289	0.0299	0.0497	0.011	0.0083	64
INFL	0.192	0.171	0.364	0.028	0.113	64

Source: Financial statements of banks, NBE reports and own computation

According to table 4.4, all variables comprised 64 observations and the OBSA (off balance sheet activities) measured as a ratio off balance sheet activities to total asset indicates that the Ethiopian banks issue an average of 0.1709 off balance sheet activities as percentage of total asset over the last eight years. For the total sample, the mean of dependent variable OBSA was 17% with a minimum of 0.66% and a maximum of 54%. That means, out of the sample banks, there is a bank which issue more OBS activities than other banks with value of 54% and there is a bank which issue less OBS activities with 0.66%.

The standard deviation statistics for OBSA (off balance sheet activities to total asset) is 0.1182, which shows the existence of relatively higher variation of off balance sheet activities to total asset ratio between the selected banks. The result implies that there is a difference in usage and issuing of off balance sheet activities among the sample banks.

Regarding the explanatory variables of the model there are some statistics that have to be mentioned. It is confirmed in the table above that the average value of bank size as measured by the natural logarithm of total asset for the sample commercial banks is about is 22.49 with having a maximum value of 25.46 and a minimum value of 20.79.The standard deviation of bank size among the sample commercial bank is 1. The standard deviation indicates that for the sample commercial banks, size varies by 1 from the average value of 22.49. As presented in table 4.4, the average value of return on asset for the sample Ethiopian commercial banks is, 3.8% (mean of 0.038) with a maximum and minimum value of 5.6 and 0.82 percent respectively. ROA indicates that the Ethiopian banks attained, on average, a positive before tax profit over the last eight years. That means, the most profitable bank among the sampled banks earned 5.6 cents of profit before tax for a single birr invested in the assets of the firm. On the other hand, the least profitable bank of the sampled banks earned 0.82 cents of profit before tax for each birr invested in the assets of the firm. The standard deviation statistics for ROA is 0.0068 which indicates that the profitability variation between the selected banks was very small. Furthermore, another interesting observation is that there was somewhat a higher variation in the cost-to-income ratio indicated by the range between 92% and 35%. The mean of the cost-to-income ratio equals 50%.

The relatively higher range between the minimum and maximum value implies that the most efficient bank has a quite substantial cost advantage compared to the least efficient bank. It could also be seen that the mean value of credit risk as measured by provision for loan loss to total loan ratio (LLP) is 0.0558 which implies that the credit risk is low in the selected commercial banks. The proportion of credit risk among the selected commercial banks shows a 4.16 percent standard deviation, which is more or less high as evidenced by a maximum and minimum value of 21.1 and 1.84 percent. The mean of market concentration which is defined by Herfindahl-Hirschman Index (HHI) is 0.42. HHI is a commonly accepted measure of market concentration and it takes into account the relative size and distribution of firms in a market and it approaches to zero when a market consists a large number of firms of relatively equal size.

In terms of capital adequacy as measured by ratio of total capital to risk weighted asset, the average value is 19% with a maximum of 0.38 and minimum value of 0.08, which is considerably above the statutory requirement of 8% set by NBE based on Basel II recommendation, even if its minimum value is 8%. The standard deviation statistics for capital adequacy is 0.0732 which shows the existence of relatively lower variation of capital to asset ratio between the selected banks. On the other hand, the outputs of the descriptive statistics indicate that, the ratio of reserve requirement (RQ) 11%, on average, with a minimum of 5% and a maximum of 15%. This means that on average each selected bank should maintain a reserve requirement of 11%of their total deposit. Table 4.4, also shows that the mean real GDP in Ethiopia for the last eight years was 11% with a maximum of 12% and a minimum of 10%.

Table 4.3 also presents for real GDP a standard deviation of 0.0073; this implies that economic growth in Ethiopia during the period of 2005 to 2012 was almost stable. The other macro-economic variable employed in this study interest spread, had a standard deviation of (0.008) and inflation had an 11% standard deviation.

4.5. Correlation analysis among variables

This section of the study presents the results and discussions of the correlation analysis. The correlation coefficients show the extent and direction of the linear relationship among variables. Pearson correlation is used in thesis. As could be seen in table 4.5, credit risk (LLP) is the most positively correlated variable with OBSA with a correlation of 0.39.This correlation clearly shows that, as the credit risk of banks increases, OBSA also moves to the same direction. Profitability measured by ROA, loan(TL) and Efficiency are positively correlated with OBSA with a correlation of 0.071, 0.072 and 0.082 respectively showing banks when profitability, loan and efficiency increases, OBSA moves to the same direction. The capital adequacy of banks is negatively correlated with OBSA, indicated by the correlation of -0.045 between total capitals to total risk weighted asset ratio and OBSA. Reserve requirement ratio has a positive correlation with OBSA with a correlation of 0.011 between reserve requirement and OBSA. The macro economic variables used in this study show a negative correlation with OBSA except interest rate spread (NIM).

Table 4.5 Correlation matrix of dependent and independent variables

		OBSA	SIZ	LLP	ROA	EFF	HHI	CAR	RQ	GDP	NIM	TL	INFL
OBSA	Pearson Correlation	1											
	Sig. (2-tailed)												
SIZ	Pearson Correlation	-.126	1										
	Sig. (2-tailed)	.321											
LLP	Pearson Correlation	.398**	-.007	1									
	Sig. (2-tailed)	.001	.957										
ROA	Pearson Correlation	.071	-.09	-.31*	1								
	Sig. (2-tailed)	.577	.448	.013									
EFF	Pearson Correlation	.082	-.3**	.146	-.57**	1							
	Sig. (2-tailed)	.521	.008	.251	.000								
HHI	Pearson Correlation	-.030	-.22	.054	-.4**	.105	1						
	Sig. (2-tailed)	.815	.075	.670	.001	.411							
CAR	Pearson Correlation	-.045	-.04	-.27*	.450**	.027	-.217	1					
	Sig. (2-tailed)	.724	.722	.027	.000	.831	.086						
RQ	Pearson Correlation	.011	.33**	-.11	.362**	-.06	-.83**	.332**	1				
	Sig. (2-tailed)	.930	.007	.351	.003	.585	.000	.007					
GDP	Pearson Correlation	-.003	-.31*	.169	-.187	.013	.704**	-.309*	-.67**	1			
	Sig. (2-tailed)	.982	.010	.182	.139	.918	.000	.013	.000				
NIM	Pearson Correlation	.120	-.4**	-.17	.308*	-.16	.002	.244	.072	-.056	1		
	Sig. (2-tailed)	.345	.000	.166	.013	.187	.988	.052	.570	.660			
TLTA	Pearson Correlation	.072	-.7**	-.18	.165	.026	.229	-.196	-.35**	.296*	.54**	1	
	Sig. (2-tailed)	.571	.000	.136	.193	.841	.069	.122	.004	.017	.000		
INFL	Pearson Correlation	-.003	.186	-.12	-.077	.032	-.030	.223	.278*	-.54**	.207	-.12	1
	Sig. (2-tailed)	.981	.141	.332	.543	.804	.814	.077	.026	.000	.100	.345	

*and** 1% and 5% significance level respectively

Source: Source: Financial statements of banks, NBE reports and own computation

4.6. Determinant of OBSA: Regression Results and Discussion

This section of the study presents the results and discussions of the regression output. In order to examine the determinant of OBSA of sample Ethiopian commercial banks multiple panel linear regression models were estimated. The regression analysis enables the researcher to empirically test the proposed hypothesis and to achieve the research objective. In this section, one dependent variable against eleven independent variables was investigated. The dependent variable is the off balance sheet activities, while the independent variables are bank size , credit risk, profitability, loan, efficiency, market concentration ,capital adequacy, reserve requirement, real GDP, interest rate spread and inflation.

This study used panel data models where the random effect and fixed effect models could be used to estimate the relationships among variables. It is also necessary to determine whether the fixed effect or random effect approach is appropriate. A common practice is to make the choice between both approaches is by running a Hausman test. To conduct a Hausman test the number of cross section should be greater than the number of coefficients to be estimated. But, in this study the numbers of coefficients are greater than the number of cross sections so it is not possible to conduct a Hausman test. In addition to this sample elements were not drown randomly from large population, the focus on this thesis, is on specific set of banks and the inference is restricted to the behavior of these banks, so the use of the fixed effects model is appropriate (Elian 2013).

Thus, the relationship between off balance sheet activities and the explanatory variables were examined by the fixed effects model in this study. The result obtained by the fixed effect model is reported in Table 4.6.

Table 4.6 Regression Results for factors affecting Ethiopian banks OBS activities.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.344378	0.589278	-2.281398	0.0273**
SIZE	0.054400	0.022133	2.457846	0.0179**
LLP	-0.060566	0.262701	-0.230550	0.8187
ROA	3.193331	1.872790	1.705120	0.0951*
TLTA	0.032801	0.134652	0.243596	0.8087
EFF	0.247412	0.092644	2.670572	0.0105**
HHI	-0.819325	0.383595	-2.135910	0.0382**
CAR	-0.108006	0.187015	-0.577529	0.5665
RQ	-1.125082	0.451131	-2.493917	0.0164**
GDP	3.837610	2.133212	1.798982	0.0787*
NIM	2.576424	1.515853	1.699653	0.0961*
INFL	0.132118	0.098521	1.341003	0.1866
R-squared	0.883697	Durbin-Watson stat		1.94567
Adjusted R-squared	0.837175			
F-statistic	18.99549			
Prob(F-statistic)	0.000000			

***, **, and * denote significance at 1%, 5%, and 10% levels respectively

Source: Financial statements of banks, NBE reports and own computation

From table 4.6, the R-squared statistics and the adjusted-R squared statistics of the model is 0.88 and 0.83 respectively. The result indicates that the changes in the independent variables explain 83 percent of the changes in the dependent variable.

That is bank size; credit risk, profitability, loan, efficiency, market concentration, capital adequacy, reserve requirement, Real GDP, interest rate spread and inflation collectively explain 83% of the changes in OBSA. The remaining of 17 % changes was explained by other factors which are not included in the model. Table 4.6 indicates that bank size was statistically significant (p-value = 0.0179) at 5 percent level and had positive relation with off balance sheet activities to total asset ratio. Similarly, profitability had positive relation with off balance sheet activities.

Based on the results shown in table 4.6, all bank-specific independent variables except loan and credit had statistically significant impact on off balance sheet activities. Furthermore the table 4.6 shows that from the two bank specific regulatory factors from capital adequacy and reserve requirement, reserve requirement has a significant negative impact on off balance sheet activities. On the other hand, among the three macroeconomic independent variables used in this study the only insignificant variable is inflation.

4.6.1. Discussions of the Results

This section discusses in detail the analyses of the results for each explanatory variable and their importance in determining off balance sheet activities. In addition, the discussions analyses the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the relationship between explanatory variables and off balance sheet activities.

Bank Size

Bank size, which is measured by the natural log of total assets, had a positive influence on the off balance sheet activities of Ethiopian banks. Bank size was found to be a statistically significant determinant of off balance sheet activities as hypothesized, Table 4.6 shows that the slope coefficient of this variable was positive and statistically significant at the 5 percent significance level. Even if it's low coefficient, this indicates that size had little impact on the OBS activities of Ethiopian banks. This result supports the Hypothesis (H1) that predicts bank size and OBS activities should have a positive association. Further, the positive coefficient between Ethiopian banks size and OBS activities clearly indicates that, an increase in banks size gives banks the opportunity to exploit economies of scale in transactions.

It also indicates that increase in banks size will provide banks the ability of providing extended banking service for large number of customers. Because banks with big size have highly qualified risk management and specialized staff and be more efficient in providing higher quality services.

So that clients who are more likely to engage in OBS activities may not consider the banks with small size as a transaction vehicle since they believe that banks with big size are too big to fail. From this one can conclude that banks with large size of the country experience more significant increases in OBS activities through economies of scale. The finding was consistent with the findings of Koppenhaver (1989), Avery and Berger (1991), Rogers and Sinkey (1999), De Young and Hunter (2003) , De Young *et al*. (2004), Hassan (2006) and Ahmed *et al* (2012) who found that banks' size affects OBS activities positively, which is consistent with the market discipline hypothesis. This implies that more creditworthy and safer bank will be more willing to use OBS activities.

Credit Risk

The ratio of provision for loan loss to total loan which is a measure of credit risk have a negative effect on off balance sheet activities which is in agreement with a prior expectation. Hypothesis 2 predicts that there is a negative relation between credit risk and bank OBS activities. In addition, this variable was statistically insignificant in explaining the off balance sheet activities of commercial banks in Ethiopia. Thus, there is insignificant negative relationship between credit risk and OBS activities of commercial banks in Ethiopia. A negative effect of the loan loss provision on OBS activities shows that banks do not use OBS activities to compensate for bad loans.

Thus bank do not use OBS activities as a means of diversifying its assets portfolio and to generate additional incomes to compensate loan portfolio risks, mainly risks that normally result from bad debt. This result supports the finding revealed by Ahmad et al (2012), Ahmad (2007), Ahmad and Hassan (2009), and Elizabeth W. Cooper, (2011).

Loan and advances (LOAN)

The regression results of the study show that there is a positive but insignificant relationship between loan and off balance sheet activities, with a regression coefficient of 0.032 and p-value of 0.808. Hypothesis 4 predicts that loan to total asset is positively related with bank off balance sheet activities. Although the statistical results reveal no significant relationship between the variables, it can be concluded that, loan still positively explains off balance sheet activities of selected Ethiopian commercial banks.

Some previous studies document a positive effect of the role of loan to total asset ratio and find that increase in loan enhance the use of more OBS activities by banks Ahmad et al (2012), Ahmad (2007), Ahmad and Hassan (2009) and Nachane and Ghosh (2002). This indicates banks will participate more in OBS activities to reduce their risk resulted from loans. However, this study does not find a significant positive association between percentage of loan ratio and bank OBS activities. Therefore, the loans to total asset ratio of the sample banks during the studied period shows positive and insignificant impact on OBS activities.

Profitability

Hypothesis 3 predicted that profitability of banks positively influence banks off balance sheet activities. The results of fixed effect model in table 4.6 indicated that profitability had a positive relationship with off balance sheet activities and statistically significant. The positive relation implies that as banks' profits increase, the creditworthiness of the banks, from the investors' point of view, will increase and the demand for OBS activities will increase in creditworthy banks.

High profits may increase cash flows, which can be retained to absorb future loses to reflect the chance to improve creditworthiness. Banks with more creditworthiness would attract or would use more of OBS businesses.

EFICIENCY

The coefficient of the ratio of cost to income, which provides information on the efficiency of the management regarding expenses relative to income, was positive and statistically significant at 5% significance level (p-value=0.0105) which is in line with a prior expectation and makes the variable an important determinant of Ethiopian banks off balance sheet activities. This showed that less cost-efficient banks with high cost-income ratios tend to diversify their revenue sources by increasing their non-interest income shares. Banks with high-cost income ratios also exhibit higher non-interest income ratios. This finding was consistent with previous studies of Joon –Ho Hahm (2008)

Market concentration

It is the only sector specific variable of the study. Literatures in banking argue that if the size and firm distribution of a specific sector is concentrated, banks may not introduce new financial products and diversify their products toward nontraditional activities such as off balance sheet activities because there is no competition. For example Gamra and Plihon argued that banks reacted to market power decline by raising their involvement in new activities and diversifying their activities which considerably altered their income structure by reducing the importance of their traditional lines of business. The computed HHI for Ethiopian banking sector shows that market concentration has been declining except an increase in 2012, implying that the banking sector is moving from less to a more competitive market.

Therefore, consistent with the literatures, the study finds a negative and significant relationship between the market concentration and Ethiopian commercial banks off balance sheet activities. Besides, the result of this study was also in agreement with what existed in reality in the Ethiopian context. For example according to Addis Guday (2005) 80% market share of the banking industry in Ethiopia is held by Commercial bank of Ethiopia and 20% by private banks and according to IMF (2012) report commercial bank of Ethiopia's assets represent about 70 percent of the sector total, as of April 2012.

Capital Adequacy (requirement)

The coefficient of capital adequacy which is measured by the capital to risk weighted asset as proxy for regulation was negative and statistically insignificant. However, positive relationship between capital adequacy and off balance sheet activities (H7) was expected. The result is inconsistent with the expectation. The negative coefficient for capital adequacy was not in favor of the regulatory tax hypothesis. Moreover, the coefficient of the CAR shows that an increase in regulation will not result in increased OBSA. This may be because as a bank's CAR increases, the ability to assume risk increases, but the need for OBS products to hedge risk exposure may decrease (Ahmad 2007).

Reserve Requirement

The other bank specific regulatory variable of the study is reserve requirement. Banking theories said that regulatory taxes on on-balance sheet assets and liabilities, in the form of reserve requirements will encourage banks to substitute off-balance sheet activities for on-balance sheet activities. Thus a positive relation was expected between reserve requirement and off balance sheet activities (H8).

Studies in the developed economies like Hassan (2006) find a positive relationship between reserve requirement and banks off balance sheet activities. However, this study finds a negative and significant impact of reserve requirement on Ethiopian commercial banks off balance sheet activities. This result is consistent with the studies of Ahmad *et al* (2012) and Ahmad and Hassan (2009) who rejected regulatory tax hypothesis on the basis of study made in Jordan banking industry and banks in MENA countries respectively.

Macroeconomic Determinant

Economic Growth (real GDP)

With regard to economic growth as measured by real GDP growth rate, table 4.6 shows a positive and significant impact on off balance sheet activities. As discussed in the methodology part there is a clear anticipation to have a positive relationship between the current Ethiopian stimulated economic growth and banks off balance sheet activities (H9). Most literatures suggest that Real GDP captures the effects caused by fluctuations in general economic activity. As result the demand for OBS products reacts positively to the business cycle due to transactions motive. Which means higher economic growth may lead to a greater demand for OBS activities. This study found a positive and significant impact of Ethiopia real GDP on banks off balance sheet activities. The significant impact of the real GDP growth on the OBS usage may indicate that higher real GDP growth does cause an increase in the OBS usage. The positive impact of the real GDP growth on the OBS usage indicates that the OBS businesses follow the overall economic growth and business cycles.

More economic growth would create more OBS usage, indicating the double role of the OBS businesses as income generating and risk management techniques.

Interest rate spread

Interest rate spread is considered as one of the key macroeconomic factors that can affect the off balance sheet activities of banks. Banking area literatures indicate that interest rate can have negative or positive impact on off balance sheet activities of banks. This study found the coefficient of interest rate which is measured by net interest margin was positive and statistically significant at the p value of 0.0961. Positive sign suggests that as the uncertainty about future interest rates increases, the future interest rate risk will increase, pushing these banks to engage in more OBS activities as risk management instruments. This significant result was also consistent with the findings of Ahmad (2007) who suggested that net interest margin is statistically significant in six regions (Africa, G7, NAFTA, North America, The European Union, and Eastern Europe)

Inflation

Regarding inflation (INF), the coefficient of inflation was positive not as anticipated (H11) and it was not statistically significant, thus, the effect of inflation on Ethiopian banks off balance sheet activities is not significant. This is may be because high inflation makes financial saving less attractive than saving in real assets which force banks to provide off balance sheet activities to generate fee. The findings also suggested that, as inflation is not a determinant of banks OBSA activities in Ethiopia as far as the parameter for this variable is insignificant as illustrated by the large p-values of 0.186.

CHAPTER FIVE

5. CONCLUSIONS and RECCOMENDATIONS

5.1 Conclusion

In the last few decades the banking system, across the globe, has witnessed an increasing usage of OBS activities as it is witnessed in banking area literatures. Since OBS activities offers several benefits in comparison to traditional banking activities (deposit collection and extending loan),there have been many hypotheses raised by researchers and policy analysts to justify the existence of these activities. These hypotheses include, generating of fee income, avoiding regulatory taxes, more flexibility at breakdown points, and risk management tool. Until recently, the use of off balance sheet activities by commercial banks found in Ethiopia have not yet developed like other developing countries and developed nations. Thus, this study has aimed to analyze determinants of OBS activities using eight Ethiopian commercial banks with a data set covering eight years period from the year 2005 to 2012. The OBS activities included in this thesis are guarantees, acceptance, letter of credit, performance bonds, trust fund, commitments, overdraft facilities and bill collection. Based on the results of the descriptive statistics, correlation and regression analysis the researcher made the following conclusions.

- The study findings revealed that there is an increase in off balance sheet activities annually in commercial banks in Ethiopia. However, the volumes of OBS handled in commercial banks in Ethiopia are still very low compared to other banks in developing and developed countries. This may be because of the financial institution structure and deficiency in technology revealed in the country.

- First, as hypothesized, that bank size positively and significantly affects OBS activities of Ethiopian banks, the result showed a positive relationship between bank size and OBS activities with at 5% significance level and a low coefficient of 0.054 which indicates size has little impact on OBS of Ethiopian banks. The coefficient of the natural logarithm of total asset shows that an increase in bank size or total asset of bank will result in increased OBS activities. This is consistent with market discipline hypothesis and this indicates that larger banks of the country experience more significant increases in OBS activities through economies of scale and as a result of wide spread networks and skilled man power.
- OBS activities in Ethiopian commercial bank are profit driven as hypothesized and they do increase with banks profit. OBS activities are profit driven and when banks' profit increase due to OBS activities or traditional bank's activities does affect the decision of OBS usage. Banks are using off-balance sheet activities in pursuit of higher profits and to satisfy the increase in demand for banking products by customers as a result of the growing economy and international trade. OBS usage is prompted by profitability considerations.
- Regarding credit risk the result showed a negative relationship between credit risk and off balance sheet activities as expected. This shows that banks do not use OBS activities to compensate for risk resulting from bad loans. It also shows that there is a decrease in credit risk for the banking industry.

- Bank efficiency positively affects bank OBS activities, which was in line with the expected sign. The result showed a significant positive relationship between operational efficiency and bank off balance sheet activities. This shows that the exhibited high-cost income ratio of the commercial banks in Ethiopia positively affects OBS activities.
- Concerning market concentration, there was an expectation to have negative and significant impact of market concentration on OBS activities of banks, the regression result indicates a negative and significant impact on Ethiopian banks off balance sheet activities. The computed HHI for Ethiopian's banking sector shows that market concentration has been declining, except in increase in 2012, implying that the banking sector is moving from less to a more competitive market. Banks reacted to this market power decline by raising their involvement in new activities and diversifying their activities which considerably altered their income structure by reducing the importance of their traditional lines of business
- The regulatory banks' specific factors are significant in determining the usage of OBS activities in Ethiopian commercial banks. It is noted that high regulatory pressure is the main characteristic for most of the sample banks. The empirical results confirm that high regulatory pressure has negative effect on the usage of the OBS activities in Ethiopian banks. This imply that the high regulatory pressure diminish the creditworthiness of the banks and reduce the incentives for the customers to engage in OBS activities offered by the sample banks.

Therefore, when restrictions imposed on banks' capital increase, the OBS activities decreased. This study joins the recent literature and rejects the regulatory tax hypothesis.

- Macroeconomic Factors seem to affect the usage of OBS activities in Ethiopia banking system. The results show that real GDP is a positive and significant factor in determining the usage of OBS activities for the sample banks. This implies that OBS activities follow economic growth and business cycle. As the economic activities intensify, the demand for the OBS activities increase. This is because OBS activities are both risk management tool and income generating engagement.
- Interest rate spread has a positive and significant impact on OBS activities, which was in line with prior expectation, indicating that Commercial banks use OBS activities to lessen their exposure to the effect of interest rate movement on the value of their business. Contrary, inflation played insignificant role in Ethiopian commercial banks off balance sheet activities.

Generally, this study finds that all bank specific factors (with the exception of loan, credit risk and capital requirement) and inflation significantly affect Ethiopian commercial banks off balance sheet activities for the last eight years. Thus the data over study period supports that regulatory tax hypothesis is not working in Ethiopian commercial banks while market discipline hypothesis is at work.

5.2 Recommendations

The primary purpose of this study is to identify underlying factors that negatively and positively influences the usage of OBS activities of banks, in case of selected eight commercial banks in Ethiopia. Based on the findings of the study the following possible recommendations were forwarded:

The use of off balance sheet activities by commercial banks found in Ethiopia have not yet developed like other developing countries and developed nations. Empirical studies and literature in banking area suggest that regulations, institutional, and technological factors can encourage the banking system for adopting different financial innovations and engage in OBS activities. The governments should institute regulatory reforms, financial sector restructuring and create credible institutional environment.

For OBS activities to succeed, the competition among private and public banks should be fair. Competition in the banking sector needs to be further enhanced and supported by policies that encourage and foster competition in the financial sector. These should be complemented with measures to promote the growth and image of private banks in a bid to enhance their ability to penetrate the market so as to break market dominance by a few banks. The variables used in the statistical analysis did not include all factors that can affect Ethiopian banks OBS activities. Given the key role that the sector plays in the economy of the country, future research should focus on more off balance activities and include more banks that would provide better insights for both management and regulatory bodies.

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Appendices

Appendix –I: Tests for the Heteroskedasticity Test: White

Heteroskedasticity Test: White

F-statistic	1.830477	Prob. F(11,52)	0.0722
Obs*R-squared	17.86444	Prob. Chi-Square(11)	0.0848
Scaled explained SS	8.992117	Prob. Chi-Square(11)	0.6226

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/25/13 Time: 18:49
Sample: 2005 2012
Included observations: 64

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.018657	0.050013	0.373049	0.7106
SIZ^2	-2.17E-05	6.19E-05	-0.351337	0.7268
LLP^2	-0.002545	0.207674	-0.012255	0.9903
ROA^2	8.060312	4.537701	1.776299	0.0815
TLTA^2	-0.050008	0.026549	-1.883613	0.0652
EFF^2	0.037917	0.014538	2.608192	0.0119
HHII^2	-0.101945	0.095330	-1.069381	0.2898
CAR^2	-0.194924	0.063907	-3.050104	0.0036
RQ^2	-0.588788	0.469014	-1.255375	0.2150
GDP^2	1.487201	2.211351	0.672530	0.5042
NIM^2	7.992673	4.551302	1.756129	0.0850
INFL^2	0.028933	0.059953	0.482594	0.6314

R-squared	0.279132	Mean dependent var	0.009818
Adjusted R-squared	0.126641	S.D. dependent var	0.012220
S.E. of regression	0.011420	Akaike info criterion	-5.939589
Sum squared resid	0.006781	Schwarz criterion	-5.534798
Log likelihood	202.0668	Hannan-Quinn criter.	-5.780121
F-statistic	1.830477	Durbin-Watson stat	1.302595
Prob(F-statistic)	0.072250		

Appendix-II: Regression Results For Factors affecting Bank OBS Activities

Dependent Variable: OBSA
Method: Panel Least Squares
Date: 09/25/13 Time: 18:03
Sample: 2005 2012
Periods included: 8
Cross-sections included: 8
Total panel (balanced) observations: 64

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.344378	0.589278	-2.281398	0.0273
SIZ	0.054400	0.022133	2.457846	0.0179
LLP	-0.060566	0.262701	-0.230550	0.8187
ROA	3.193331	1.872790	1.705120	0.0951
TLTA	0.032801	0.134652	0.243596	0.8087
EFF	0.247412	0.092644	2.670572	0.0105
HHII	-0.819325	0.383595	-2.135910	0.0382
CAR	-0.108006	0.187015	-0.577529	0.5665
RQ	-1.125082	0.451131	-2.493917	0.0164
GDP	3.837610	2.133212	1.798982	0.0787
NIM	2.576424	1.515853	1.699653	0.0961
INFL	0.132118	0.098521	1.341003	0.1866

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.883697	Mean dependent var	0.172628
Adjusted R-squared	0.837175	S.D. dependent var	0.118268
S.E. of regression	0.047723	Akaike info criterion	-3.005277
Sum squared resid	0.102487	Schwarz criterion	-2.364358
Log likelihood	115.1688	Hannan-Quinn criter.	-2.752786
F-statistic	18.99549	Durbin-Watson stat	1.945709
Prob(F-statistic)	0.000000		