SAINT MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

THE EFFECT OF NATIONAL BANK REGULATION ON BANKS PROFITABILITY: EVIDENCE FROM THE PRIVATE BANKS IN ETHIOPIA

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JANUARY, 2017

ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO SAINT MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULLFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF GENERAL BUSINESS ADMINISTRATION

JANUARY, 2017

ADDIS ABABA, ETHIOPIA

ENDORSEMENT

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

Advisor _____ Signature and Date _____

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university and that all sources of materials used for the thesis have been dully acknowledged.

Declared by:

Name: Meron Tekalign

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Date: January**,** 2017

Acknowledgements

My deepest and warmest thank goes to the Almighty God and his mother St. Marry, who help me in all aspect of my life and my sincere and deepest gratitude goes to my advisor Arega Seyoum (Dr.) for his unreserved assistance in giving me relevant comments and guidance throughout the study. My acknowledgements also go to my family and my husband Gashaw Desalegn for all the supports they provided. My grateful thanks also go to National Bank of Ethiopia and MoFED for providing the necessary data for the study.

Abstract

The main objective of this study is to examine the effect of NBE regulations on private banks profitability through the significant regulatory variables explaining the NBE directives, using bank- specific and macroeconomic variables as control variables. Balanced fixed effect panel regression was used *for the data of six private commercial banks in the sample covered the period from 2001 to 2014 (annual data is considered). Three regulatory factors affecting banks performance in terms of net interest margin were selected and analysed. The results indicated that NBE Bill and Credit cap had negative and statistically significant effect on banks profitability but reserve requirement had insignificant. Among the control variables bank size, efficiency and return on equity has a positive and statistically significant impact on performance of banks under the sample measured inters of NIM. Among the macroeconomic indicator variables both inflation and financial sector development has negative and statically significant effect on profitability of banks while GDP has insignificant effect on profitability.*

NBE has to consider the effect of such policy on banks profitability and their overall performance.

On the other hand banks need to increase operating efficiency to trade off such effects and to serve their customers as usual to create long-lasting relationship when such kinds of regulations are imposed.

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List of Acronyms

AIB..... Awash International Bank

BOA..... Bank of Abyssinia

CC..... Credit Cap

CLRM.....Classical linear Regression Model

CPI..... Consumer Price Index

DB.....Dashen Bank

EPRDF.....Ethiopian People's revolutionary Democratic Front

FD..... Financial Development

FE.....Fixed Effect

FEM..... fixed effect model

GDP.....Gross Domestic Product

HS.....Housing Scheme

INF.....Inflation

LR.....Liquidity Ratio

MoFED.....Ministry of Finance and Economic Development

M2GDP.....Broad money Supply to GDP ratio

NBE.....National Bank Of Ethiopia

NIB.....Nib International Bank

NIM.....Net Interest Margin

NBEB.....National Bank of Ethiopia Bill

OLS.....Ordinary Least Square

RE.....Random Effect

REM.....random effect model

ROA.....Return on Asset

ROE.....Return on Equity

RR.....Required Reserve

TA.....Total Asset

TOE.....Total Operating Expense

WB.....Wegagen Bank

Chapter one

1.0 Introduction

1.1 Back ground of the study

Banking occupies one of the most important positions in the modern economic world. It is necessary for trade and industry. Hence it is one of the great agencies of commerce. Although banking in one form or another has been in existence from very early times, modern banking is of recent origin. It is one of the results of the Industrial Revolution and the child of economic necessity. Its presence is very helpful to the economic activity and industrial progress of a country. The functions of the banking system including providing payments and settlements systems, mechanism for borrowing and lending, and pooling and allocation of funds, among others impinge on all aspects of the economy and are central to the overall performance of the economy. However, despite their important role in the economy, banks are nevertheless susceptible to failure. Banks, like any other business, can go bankrupt. However, unlike most other businesses, the failure of banks, especially very large ones, can have far-reaching implications. As we saw during the great depression and most recently, during the global financial crisis and the ensuing recession, the health of the bank system (or lack thereof) can trigger economic calamities affecting millions of people. Consequently, it is imperative that banks operate in a safe and sound manner to avoid failure. One way to ensure this is for governments to provide diligent regulation of banks. Yet, with the advent of globalization, banking activities are no longer confined to the borders of any individual country. With cross-border banking activities rapidly increasing, the need for international cooperation in bank regulation has likewise increased (Larson, 2011).

Regulation refers to a process in which there is a monitoring of the financial institutions by a body that is directed by the government in an effort to achieve macroeconomic goals through monetary policies as well as other measures permissible by law. However, they must be extensively considered and skilfully administered because inappropriate or

ineffective regulatory measures results in catastrophic economic problems (Kevin and Nicol, 2000).

Recent economic crises have revealed the importance of bank regulations to hedge against the high risk attributed to imbalances in banks balance sheets. Nonetheless, excessive regulations may have adverse effects. On the one hand, they serve as prudential measures that mitigate the effects of economic crises on the stability of the banking system and subsequent accompanying macroeconomic results. On the other hand, excessive regulations may increase the cost of intermediation and reduce the profitability of the banking industry. Simultaneously, as banks become more constrained, their ability to expand credit and contribution to economic growth will be hampered (Naceur & Kandil, 2011).

Economic theory provides convicting predictions about the effects of each of these bank regulations and supervisory practices on bank development, performance, and stability. Some argue, for example, in favour of restricting banks from participating in securities, insurance, and real estate activities or from owning non-financial firm. They stress that, neither private nor official entities can effectively monitor such complex banks due to informational asymmetries, and both the market and political power enjoyed by such banks can impede competition and adversely influence policies. Others argue the opposite, stressing that , Informational asymmetries are not that great, Potential adverse spill over to the entire economy are not sufficient to warrant such restrictions, and Fewer restrictions allow banks to exploit economies of scale and scope and thereby provide services more efficiently

In Ethiopia the birth of modern banking trace back to the imperial era bank of Abyssinia being the first modern bank in Ethiopia. The industry has passed through different political and economic situations which have played a great role in giving different features and shaping the industry. A new era begins in the industry after 1991, when ERRDF came in to power and allowed private ownership in Licensing and Supervision of Banking Business Proclamation No. 84/1994.

Since its restructure the NBE (National Bank of Ethiopian) has been issuing different regulation and supervision on the banking activities. Of course these regulations has been formulated to stabilize the economy and to ensure the soundness of the banking industry. In literature there are findings where different regulation issued and imposed on banks have different outcomes on the development and performance of the banking industry some had unintended consequences on the industry. To this end, there has not been any research conducted at the researcher knowledge that has investigated the impact of those rules and regulation on the performance of the banking industry. Therefore, the interest of the researcher is to examine the impact of different regulation imposed and formulated by the central bank on the performance of the banking industry in Ethiopia.

1.2 Statement of the Problem

In most countries, commercial banking is one of the most heavily regulated industries. Even though banks are usually for-profit institutions and bankers have free reign with respect to daily operations, the banking industry is commonly regarded as a matter of public concern. There exists a long tradition of regulating the financial sector in many countries. The primary justification for bank regulation is usually the reduction of systemic risk that can lead to severe financial crises. This line of reasoning assumes that regulation will reduce the probability of these crises. In contrast, the incentives of many countries' regulators are to protect the government deposit insurance guarantee. These motivations may lead to overregulation that could stifle the creativity of private firms.

Bank regulation covers many areas of bank operations. One of the most important types of regulation specifies the activities that are permitted. These regulations vary greatly around the globe: in some countries bank activities are very narrowly defined; in others they are broadly defined. These regulations also determine the extent to which banks compete with other types of financial and non-financial firms (e.g., insurance companies, investment banks, and savings and loans). Regulations may specify who is allowed to own a bank (e.g., whether commercial firms can own banks). Regulations also address government ownership of banks and foreign bank ownership of domestic banks. (R.Barth, Caprio & Levine, 2002).

Broadly categorizing there is five type of regulation seek to enhance the performance and value of commercial banks and thus the viability of the commercial banking industry. These

include (1) entry regulations, (2) safety and soundness regulations, (3) credit allocation regulations, (4) consumer protection regulations, and (5) monetary policy regulations.

Since its reestablishment under article Article 55(1) of the constitution of the Federal Democratic Republic of Ethiopia, the NBE is established to control the financial system and monetary policy of the country. During its time the NBE has issued different directives and supervision so that it will achieve its objectives of stabilizing the financial sector and ensuring the soundness of the banking industry and financial system as a whole.

NBE has taken some bold measures by issuing different regulation that could affect the banking sector. Pertinent to the rampant inflation NBE takes a measure to reduce the credit expansion of banks by issuing different directives at different times. In doing so it raised the reserve requirement on commercial banks from 5% (Directive No. SBB/37/2004) to 10% effective July 2007 (Directive No. SBB/42/2007) and further to 15% effective April 2008 (Directive No. SBB/45/2008). In addition to this On 4 April 2011, NBE issued a directive requiring all private commercial banks to invest 27% of their every new loan disbursements on NBE bills purchase for five years at a very low interest rate (Directive No. MFA/NBE Bills/001/2011). This act of NBE was defended by the authority on mobilizing resources for strategic and priority sector investments which the private banking sector seldom grant a loan. Credit cap was the other measure taken by NBE. It has set the maximum amount of credit that the bank should make since March 2009 to March 2011.

The researcher believes that the consequence of those regulations needs a critical assessment of its impact on banks performance. Though there are numerous studies on the impact of regulation on banks performance in different countries and multi country studies however, there is scanty scientific works that has gone to investigate the impact of NBE regulation on the performance of banking industries in Ethiopia.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of this study is to examine the effect of National Bank regulation on private banks performance in Ethiopia.

1.3.2. Specific Objectives

The specific objectives are as follows:

- To evaluate the effect of setting up of reserve requirement on bank profitability.
- To examine the effect of credit cap on banks profitability.
- To investigate the impact of bill purchases on banks profitability.

1.4. Research Questions and Hypothesis

1.4.1. Research Questions

RQ1: What is the impact of NBE Bills purchase on bank performance?

RQ2: How the continuous increase in reserve requirement affects bank profitability?

RQ3: What was the effect of credit cap on bank performance?

1.4.2. Research Hypothesis

The researcher has outlined the following hypotheses in order to manage the research question given above. This study attempts to test the following hypotheses regarding the impact of different regulations on the performance of private banks in Ethiopia.

Required reserve is a portion of bank's asset in National Bank of Ethiopia with no interest. These part of bank's asset is held in the central bank and banks do not earn interest rate income. Banks would have invested earn interest if they are to invest that portion of income and hence would increase their profit. However since these do not happen already banks give up the interest income they would gain from portion of their asset held by the central bank as required reserve. The researcher expects that required reserve will have a negative impact on performance on banks.

H_1: Reserve requirement has a negative and significant effect on banks performance

NBE Bills represent amount of forced bill purchase by a bank, at low interest rate. As investment in NBE Bills increase, banks will lose a benefit if it would have invested in relatively high interest bearing assets, like giving loans to borrowers with an interest rate of

atleast12% but NBE Bills generateonly3% return which results in an opportunity cost of 9%. The researcher expects that it will have a negative effect on performance of banks.

H_2: NBE-Bills have a negative and significant effect on banks performance.

Credit cap regulation imposes restriction on banks not to give loan more than a ceiling set by the National Bank of Ethiopia. If banks are restricted to give loan as there potential they will lose interest income they would have earned. Therefore the credit celling legislation will impact the profitability of banks.

H_3: Credit cap has a negative and significant effect on banks performance.

1.5. Scope and Limitation of the Study

The study is limited to examine the impact of the regulatory variables on banks performance, which are applied by the National Bank of Ethiopia. Specifically, the paper limits itself in determining the impact of NBE bills purchase by private banks, credit cap and reserve requirements on performance of private banks in Ethiopia.

1.6. Significance of the Study

The study has the following significances for policy makers, companies and other stakeholders:

- It will enable policy makers to take deep-considerations on the impact regulations have on banks performance during policy formulation and implementation
- The results of this study will create awareness for banks about the effect of NBE regulation on their profitability; give the opportunity to influence NBE by providing feedback during policy formulation and implementation.
- In addition to the above points, the NBE can use the study or the recommendations included in this paper as a base to improve its policy\regulation after carefully evaluating its impact.
- The research can be a good resource for other researcher interested on the issues raised by the author.

1.7. Organization of the paper

This research report is organized in five chapters. Chapter one provides the general introduction about the whole report. Chapter two describes the review of related literatures. Chapter three provide detail description of the methodology employed by the research. Chapter four contain data presentation, analysis and interpretation. Finally, the last chapter concludes the total work of the research and gives relevant recommendations based on the findings.

Chapter two

2. Literature Review

This chapter summarizes the information from other researchers who have carried out their research in the same field of study. The specific areas covered here are theoretical review. The chapter is organized according to specific objectives in order to ensure relevance to the research problem.

2.1 Theoretical Literature Review

The banking industry is heavily regulated in most countries. The rules in banking can affect both the structure of the industry and the performance of firms. Bank regulation has many facets and different aspects of regulation differ across countries. The structure of the banking sector and its performance also vary widely across countries. Many countries are in the process of changing their regulatory structures, and the evidence provided here should prove useful in assessing the effects of different types of regulatory changes that may be considered.

2.1 Regulation of the Banking Industry

In most countries, commercial banking is one of the most heavily regulated industries. Even though banks are usually for-profit institutions and bankers have free reign with respect to daily operations, the banking industry is commonly regarded as a matter of public concern.

The case for government regulation and intervention can be traced back to Pigou (1938), who argues that the existence of monopoly power, externalities, and informational asymmetries creates a role for government intervention to offset these market failures. On the other hand, Shleifer and Vishny (1998) argue that regulations that empower the private sector to monitor banks will be more effective in enhancing bank performance and stability than direct government intervention through regulation. Clearly, these conclusions are quite distinct as to the most effective regulation in the banking system.

There exists a long tradition of regulating the financial sector in many countries. The primary justification for bank regulation is usually the reduction of systemic risk that can lead to severe financial crises. This line of reasoning assumes that regulation will reduce the probability of these crises. In contrast, the incentives of many countries' regulators are to

protect the government deposit insurance guarantee. These motivations may lead to overregulation that could stifle the creativity of private firms.

Bank regulation covers many areas of bank operations. One of the most important types of regulation specifies the activities that are permitted. These regulations vary greatly around the globe: in some countries bank activities are very narrowly defined; in others they are broadly defined. These regulations also determine the extent to which banks compete with other types of financial and non-financial firms (e.g., insurance companies, investment banks, and savings and loans). Regulations may specify who is allowed to own a bank (e.g., whether commercial firm can own banks). Regulations also address government ownership of banks and foreign bank ownership of domestic banks.

2.2 Why Regulate Banks

Although banks are operated for profit and bankers are free to make many decisions in their daily operations, banking is commonly treated as a matter of public interest. Banking laws and regulations extend to many aspects of banking, including who can open banks, what products can be offered, and how banks can expand.

Much of the regulatory system has developed in response to financial crises and other historical and political events. No central architect was assigned to design the overall system or lay out a single set of principles. Instead, many people with many viewpoints, objectives, and experiences have been responsible for the current supervisory framework in the world. As a consequence, bank regulation has evolved to serve numerous goals — goals which have changed over time and on occasion even been in conflict with one another.

2.2.1 PROTECTION OF DEPOSITORS

The most basic reason for regulation of banking is depositor protection. Pressure for such regulation arose as the public began making financial transactions through banks, and as businesses and individuals began holding a significant portion of their funds in banks.

Banking poses a number of unique problems for customers and creditors. First, many bank customers' use a bank primarily when writing and cashing checks and carrying out other

financial transactions. To do so, they must maintain a deposit account. As a consequence, bank customers assume the role of bank creditors and become linked with the fortunes of their bank. This contrasts with most other businesses, where customers simply pay for goods or services and never become creditors of the firm.

2.2.2 MONETARY AND FINANCIAL STABILITY

Apart from just being concerned about individual depositors, banking regulation must also seek to provide a stable framework for making payments. With the vast volume of transactions conducted every day by individuals and businesses, a safe and acceptable means of payment is critical to the health of our economy. In fact, it is hard to envision how a complex economic system could function and avoid serious disruptions if the multitude of daily transactions could not be completed with a high degree of certainty and safety. Ideally, bank regulation should thus keep fluctuations in business activity and problems at individual banks from interrupting the flow of transactions across the economy and threatening public confidence in the banking system.

The monetary authority has responsibility for controlling the overall volume of money circulating throughout the economy and thus for providing a stable base for our payments system. Banks play an important role in this monetary system, since their deposit obligations make them the major issuers of money in the economy. This role is further acknowledged through specific laws and regulations determining which institutions can offer deposit accounts, the Level of reserves that must be held against these accounts, and the various deposit reports that must be filed.

Another policy aspect of monetary stability is supervision and regulation of the banking system. To provide stability, banking regulation should foster the development of strong banks with adequate liquidity and should discourage banking practices that might harm depositors and disrupt the payments system. In banking regulation, the objective of monetary stability has been closely linked with the goal of depositor protection. Financial crises and unintended fluctuations in the money supply have been prevented primarily by promoting confidence in banks and guaranteeing the safety of deposits.

2.2.3 EFFICIENT AND COMPETITIVE FINANCIAL SYSTEM

Another aspect of a good banking system is that customers are provided quality services at competitive prices. One of the purposes of bank regulation, therefore, is to create a regulatory framework that encourages efficiency and competition and ensures an adequate level of banking services throughout the economy.

Efficiency and competition are closely linked together. In a competitive banking system, banks must operate efficiently and utilize their resources wisely if they are to keep their customers and remain in business. Without such competition, individual banks might attempt to gain higher prices for their services by restricting output or colluding with other banks. Competition is also a driving force in keeping banks innovative in their operations and in designing new services for customers. A further consideration is that for resources throughout the economy to flow to activities and places where they are of greatest value, competitive standards should not differ significantly across banking markets or between banking and other industries.

The promotion of an efficient and competitive banking system carries a number of implications for regulation. Competition and efficiency depend on the number of banks operating in a market, the freedom of other banks to enter and compete, and the ability of banks to achieve an appropriate size for serving their customers. For instance, too few banks in a market could encourage monopolization or collusion, while banks of a suboptimal size might be unable to serve major customers and might be operating inefficiently. Consequently, regulators must be concerned with the concentration of resources in the banking industry and with the opportunities for entry and expansion across individual banking markets.

Banking regulation must also take an approach that does not needlessly restrict activities of commercial banks, place them at a competitive disadvantage with less regulated firms, or hinder the ability of banks to serve their customers' financial needs. Finally, regulation should foster a banking system that can adapt and evolve in response to changing economic conditions and technological advances.

2.2.4 CONSUMER PROTECTION

Another goal of banking regulation is to protect consumer interests in various aspects of a banking relationship. Different regulatory objectives serve to protect consumers in a number of ways, most notably through safeguarding their deposits and promoting competitive banking services. However, there are many other ways consumers are protected in their banking activities. These additional forms of protection have been implemented through a series of legislative acts.

The first is to require financial institutions to provide their customers with a meaningful disclosure of deposit and credit terms. The main intent behind such disclosures is to give customers a basis for comparing and making informed choices among different institutions and financial instruments.

The disclosure acts also serve to protect borrowers from abusive practices and make them more aware of the costs and commitments in financial contracts. A second purpose of consumer protection legislation is to ensure equal treatment and equal access to credit among all financial customers. The equal treatment acts can be viewed as the financial industry's counterpart to civil rights legislation aimed at ensuring equal treatment in such areas as housing, employment, and education. Other purposes associated with consumer protection include promoting financial privacy and preventing problems and abusive practices during credit transactions, debt collections, and reporting of personal credit histories.

2.3 Supervisory policies and performance

Given the interconnectedness of the banking industry and the reliance that the national and global economy hold on banks, it is important for regulatory agencies to maintain control over the standardized practices of these institutions, government regulation and supervision of banks promotes their safety and soundness in order to protect the payments system from bank runs that contract bank lending and threaten macroeconomic stability. Protecting the payments system frequently involves deposit insurance. To the extent that the insurance is credible, it reduces depositor's incentive to run banks when they fear banks solvency.

Consequently, it reduces banks liquidity risk and, to the extent it is under-priced, gives banks the incentive to take additional risk for higher expected return (R. Barth, 2008).

2.4 Types and kinds of regulation

2.4.1 Regulations on bank activities and banking-commerce links

There are five main theoretical reasons for restricting bank activities and banking commerce links. First, conflicts of interest may arise when banks engage in such diverse activities as securities underwriting, insurance underwriting, and real estate investment.

Such banks, for example, may attempt to "dump" securities on ill-informed investors to assist firms with outstanding loans. Second, to the extent that moral hazard encourages riskier behaviour, banks will have more opportunities to increase risk if allowed to engage in a broader range of activities. Third, complex banks are difficult to monitor. Fourth, such banks may become so politically and economically powerful that they become "too big to discipline." Finally, large financial conglomerates may reduce competition and efficiency. According to these arguments, governments can improve banking by restricting bank activities.

There are alternative theoretical reasons for allowing banks to engage in a broad range of activities, however. First, fewer regulatory restrictions permit the exploitation of economies of scale and scope. Second, fewer regulatory restrictions may increase the franchise value of banks and thereby augment incentives for more prudent behaviour. Lastly, broader activities may enable banks to diversify income streams and thereby create more stable banks.

2.4.2 Regulations on capital adequacy

Traditional approaches to bank regulation emphasize the positive features of capital adequacy requirements. Capital serves as a buffer against losses and hence failure. Furthermore, with limited liability, the proclivity for banks to engage in higher risk activities is curtailed with greater amounts of capital at risk. Capital adequacy requirements, especially with deposit insurance, play a crucial role in aligning the incentives of bank owners with depositors and other creditors.

2.4.3 Deposit insurance design

Countries adopt deposit insurance schemes to prevent widespread bank runs. If depositors attempt to withdraw their funds all at once, illiquid but solvent banks may be forced into insolvency. To protect payment and credit systems from contagious bank runs, many favour deposit insurance plus powerful official oversight of banks to augment private-sector monitoring of banks.

Deposit insurance schemes come at a cost, however. They may encourage excessive risk-taking behaviour, which some believe offsets any stabilization benefits. Yet, many contend that regulation and supervision can control the moral-hazard problem by designing an insurance scheme that encompasses appropriate coverage limits, scope of coverage, coinsurance, funding, premier structure, management and membership requirements.

2.4.4 Supervision

Some theoretical models stress the advantages of granting broad powers to supervisors. The reasons are as follows. First, banks are costly and difficult to monitor. This leads to too little monitoring of banks, which implies sub-optimal performance and stability. Official supervision can ameliorate this market failure. Second, because of informational asymmetries, banks are prone to contagious and socially costly bank runs. Supervision in such a situation serves a socially efficient role. Third, many countries choose to adopt deposit insurance schemes. This situation (1) creates incentives for excessive risk-taking by banks, and (2) reduces the incentives for depositors to monitor banks. Strong, official supervision under such circumstances can help prevent banks from engaging in excessive risk-taking behaviour and thus improve bank development, performance and stability.

Alternatively, powerful supervisors may exert a negative influence on bank performance. Powerful supervisors may use their powers to benefit favour constituents, attract campaign donations, and extract bribes. Under these circumstances, powerful supervision will be positively related to corruption and will not improve bank development, performance and stability. From different perspective Kane (1990) and Boot and Thakor (1993) focus on the agency problem between tax payers and bank supervisors. In particular, rather than focusing

on political influence, Boot and Thakor (1993) model the behavior of a self-interested bank supervisor when there is uncertainty about the supervisor's ability y to monitor banks.
Under these conditions, they show that supervisors may undertake socially sub-optimal actions. Thus, depending on the incentives facing bank supervisors and the ability of taxpayers to monitor supervision, greater supervisory power could hinder bank operations.

2.2 Empirical Evidence

A number of empirical studies have sought to estimate the effects of different regulatory determinants and show former some empirical findings within these areas. Specifically the sections will be concerned with the relationships between regulation and financial performance of financial institutions.

Eurlong (1992), Haubrich and Wachtel (1999), concluded that the capital regulations in credit Unions in the U.S. contributed to a decrease in lending that helped fuel a post –capital requirements credits crunch. Berger and Udell (1994) examine whether the risk –based capital requirements put into place in the late 1980s contributed to the so-called "credit crunch "that occurred in the United States in the early 1990s. They find evidence that other sources of loan supply reduction or declines in loan demand in the early 1990s played much more prominent role in reducing financial institutions lending. In contrast, Peek and Rosengren (1995) conclude that there is considerable evidence, at least for New England, that both lower loan demand and a capital-crunch-induced decline in loan supply together brought about a decline in lending. Brinkman and Horvitz (1995) also find evidence of significant loan supply responses to the Basle I capital requirements. Wagstar (1999) reaches the same conclusion for Canada and the U.K. He fails to find support, however, for this result in the cases of Germany, Japan, and the U.S., where he concludes that a number of factors played a role in generating a credit crunch.

Benh-Khedhiri, Casu, and Sheik-Rahim (2005), study on profitability and interest rates differentials in Tunisian banking industry. More specifically, they focused on the determinants of credits unions' net interest margins as indicators of the sector's efficiency. The study seeks to establish the direct effects of capital regulations and capital requirements.

Not all researchers agree that capital regulation has had significant effects on Financial Institutions. Jackson el al. (1999) review a number of prior studies investigating how capital adequacy regulation influence actual capital ratio; such as Rime (2001). Jackson et al conclusion is that in the near term financial mainly respond to strict capital adequacy by reducing lending and that there is little conclusive evidence that capital regulation has induced financial institutions to maintain higher capital to assets ratios than the otherwise would choose if unregulated.

Hughes et al.,(2001) find that when capital is included in cost functions to derive scale economies, this generally has a positive influence in terms of generating returns to scale (constant returns tend to be found when capital is excluded from their cost function estimates). Others, such as Altunbas et al. (2000), Fare et al. (2004) also find that capital can significantly influence bank cost and profit efficiency measures. Altunbas et al. (2007) in their cross-country study of European banks, for instance, find that relatively inefficient banks appear to hold more capital, while evidence from the other literature is mixed. While this literature clearly indicates that capital influences bank efficiency it is difficult to extrapolate the expected direction of its influence on performance, as it is very likely to depend on the relative changes of inputs and outputs in the production process over time.

The extent that bank productivity is related to the transformation of inputs like deposits to outputs like loans, capital requirements may affect productivity through various channels. The first channel is through the impact of capital requirements on bank lending, which is generally supported by the theoretical literature. For example, Kopecky and VanHoose(2006) argue that capital requirements influence bank decision-making in terms of both the quantity of lending and the quality of the loans made. Their theoretical model illustrates that the introduction of binding regulatory capital requirements on a previously unregulated banking system reduces aggregate lending, while loan quality may either improve or worsen.

For example, Thakor (1996) argues that in a competitive environment, an increase in the minimum capital requirement will result in higher loan-funding cost and lower profit from

lending, since the bank is unable to pass this cost to borrowers. Thus, lending will be less attractive relative to investing in government securities, which do not require capital to be held against them. However, the mix of assets can have a substantial impact on productivity, if banks are not equally efficient in managing various categories of assets. Productivity can also be influenced through the impact of capital requirements on the liability side of banks' balance sheets. This is based on the fact that deposits and equity may be alternative sources of funds for regulators (Santos, 1999). Nevertheless, banks may be forced to substitute equity for deposits and issue new equity to meet capital adequacy requirements. Indeed, Santos (2001) points out that even though an increase in capital standards may improve bank stability, it may not be desirable since it decreases deposits. Obviously, this decrease in the level of deposits can have an impact on productivity. Furthermore, Besanko and Kanatas (1996) outline that in the case of the above scenario, where banks issue new equity, agency problems may arise, as it is likely that insiders (i.e. existing shareholders) will become less productive monitors. Differently phrased and from a corporate governance perspective, less monitoring may lead managers to allocate funds less efficiently.

Related empirical research that focuses on other aspects of banks' performance also seems to generate mixed findings. Barth et al. (2004) find that while stringent capital requirements are associated with fewer non-performing loans, capital stringency is not robustly linked to banking sector stability, development or performance, when controlling for banks. However, because capital is more expensive than deposits, banks will generally choose to operate with the minimum capital level specified by differences in regulatory regimes. Pasiouras et al. (2006) find a negative relationship between capital requirements and banks' soundness as measured by Fitch ratings. In contrast, Pasiouras (2008) reports a positive association between technical efficiency and capital requirements, although this is not statistically significant in all cases. The empirical results are yet again mixed. Barth et al. (2004) indicate that there is no strong association between bank development and performance and official supervisory power. However, the results of Barth et al. (2002) show those more powerful government supervisors are associated with higher levels of non-performing loans, while Barth et al. (2003) find that official government power is particularly harmful to bank development in countries with closed political systems.

Barth et al., (2004) summarize various reasons for which this can have a negative influence on bank performance. For example, politicians may use powerful supervisors to persuade banks to lend to favoured borrowers on advantageous terms. Furthermore, politicians and supervisors may use their power to benefit certain constitutes, attract campaign donations, and extract bribes (Djankov et al., 2002). Obviously, when banks are forced under the threat of a non-compliant discipline to direct their credit to politically connected firms, they cannot use risk-return criteria (Beck et al., 2006). In addition, Levine (2003) mentions that powerful banks may, under the political/regulatory capture theory, confine politicians and induce supervisors to act in the interest of banks rather than the interest of the society (Stigler, 1971).

The results of Pasiouras et al. (2006) also indicate a negative relationship between supervisory power and overall bank soundness (i.e. credit ratings). In contrast, after controlling for accounting and auditing requirements, Fernandez and Gonzalez (2005) report that in countries with low accounting and auditing requirements a more stringent disciplinary capacity of supervisors over management action appears to be useful in reducing risk-taking. Furthermore, Pasiouras (2008) finds a positive and statistically significant impact of supervisory power on technical efficiency in most of his specifications.

On the basis of the above discussion, it seems likely that the performance of banks will be influenced by the power of the official supervisors, although, like in the case of capital regulation, it is again difficult to predict the precise direction of this relationship.

Most of the empirical studies tend to support the view that market discipline will have a positive impact on the banking industry. Barth et al. (2004) find that regulations that encourage and facilitate private monitoring of banks are associated with greater bank development and lower net interest margins and non-performing loans. Additional results from Barth et al. (2007) indicate that private monitoring has a negative impact on overhead costs and enhances the integrity of bank-firm relations. Pasiouras (2008) reports a robust positive and significant relationship between disclosure requirements and technical

efficiency. Demirguc-Kunt et al. (2008) find that countries where banks have to report regular and accurate financial data to regulators and market participants have sounder banks.

Barth et al. (2004) find a negative association between restrictions on bank activities and banking sector development and stability. Barth et al. (2001) also confirm that greater regulatory restrictions on bank activities are associated with higher probability of suffering a major banking crisis, as well as lower banking sector efficiency. Lower restrictions on bank activities have also been associated with higher credit ratings (Pasiouras et al., 2006).

In Contrast, Fernandez and Gonzalez (2005) find that stricter restrictions on bank activities are effective at reducing banking risk, although the authors indicate that restrictions are only effective at controlling risk when information disclosure and auditing requirements are poorly developed.

Chapter three

Methodology

3.1 Research Design

Research design is a logical and systematic plan for directing a research study. It specifies the objectives of the study, the methodology and techniques to be adopted for achieving the objectives (Mugenda and Mugeenda, 2003).

This chapter present the research design and methodology that was used to carry out the research. It presents the research design, the population, sample size and sampling procedure, data collection and data analysis.

3.2 Source and Type of Data

The research used bank level data. The data on banks are taken from the National Bank of Ethiopia from Bank Supervision Directorate. The type of data used is a secondary data from the balance sheet and income statement of each selected banks, journals and publications of NBE and MoFED for the macroeconomic data from 2001 to 2014. All data was collected on annual base.

3.3 Population and sampling

According to NBE (2014/15) report there are sixteen banks of which two are government owned. Out of the fourteen private commercial banks only six banks are chosen on purpose. The choice of the number of banks is based on the number of years of their operation. To investigate the research problems at hand I prefer to use relatively older banks to include the analysis of the impact of national bank of Ethiopia on the performance of commercial banks in Ethiopia. The target population are the private commercial banks registered at the national bank of Ethiopia (NBE) which supervises the activities of commercial banks in Ethiopia. The list was obtained from the national bank of Ethiopia.

As a sampling framework, I used purposive sampling. The study covers 13 years. There are relatively young banks with the age of less than 13 years. The study included all private banks with the age of greater than or equal to 13 years. The list of the sample included in the study are the following banks Dashen Bank S.C (DB), Awash International Bank S.C

(AIB), Wogagen Bank S.C (WB), United Bank S.C (WB), Nib International Bank S.C (NIB) and Bank of Abyssinia S.C (BOA).

3.4 Model Specification and Variable Description

3.4.1. Model Specification

The main objective of this study is to investigate the impact of national bank regulation on performance of private commercial banks in Ethiopia. The study explained bank performance (NIM) in the commercial banks supervised by national bank of Ethiopia, using empirical model that includes a measure of regulations plus a number of other major determinants that includes bank specific and macroeconomics indicator.

A linear regression model of financial performance versus regulation has been applied to examine the relationship between the variables. The model treats financial performance of commercial banks as dependent variable while independent variables are bank regulations and other macroeconomic and bank specific variables.

Therefore, to see the impact of regulatory measures on banks performance, the significant factors affecting banks performance were used as the representatives for the variation in performance. Therefore the following regression models were used to see the effect of regulatory variables, while controlling bank specific and macroeconomic variables on banks performance. Thus, the general panel regression model was as follows:

$$\mathbf{I_{it}=\alpha+\beta_1 x^B_{it}+\beta_2 x^S_{it}+\beta_3 X^M_{it}+\varepsilon_{it}}$$

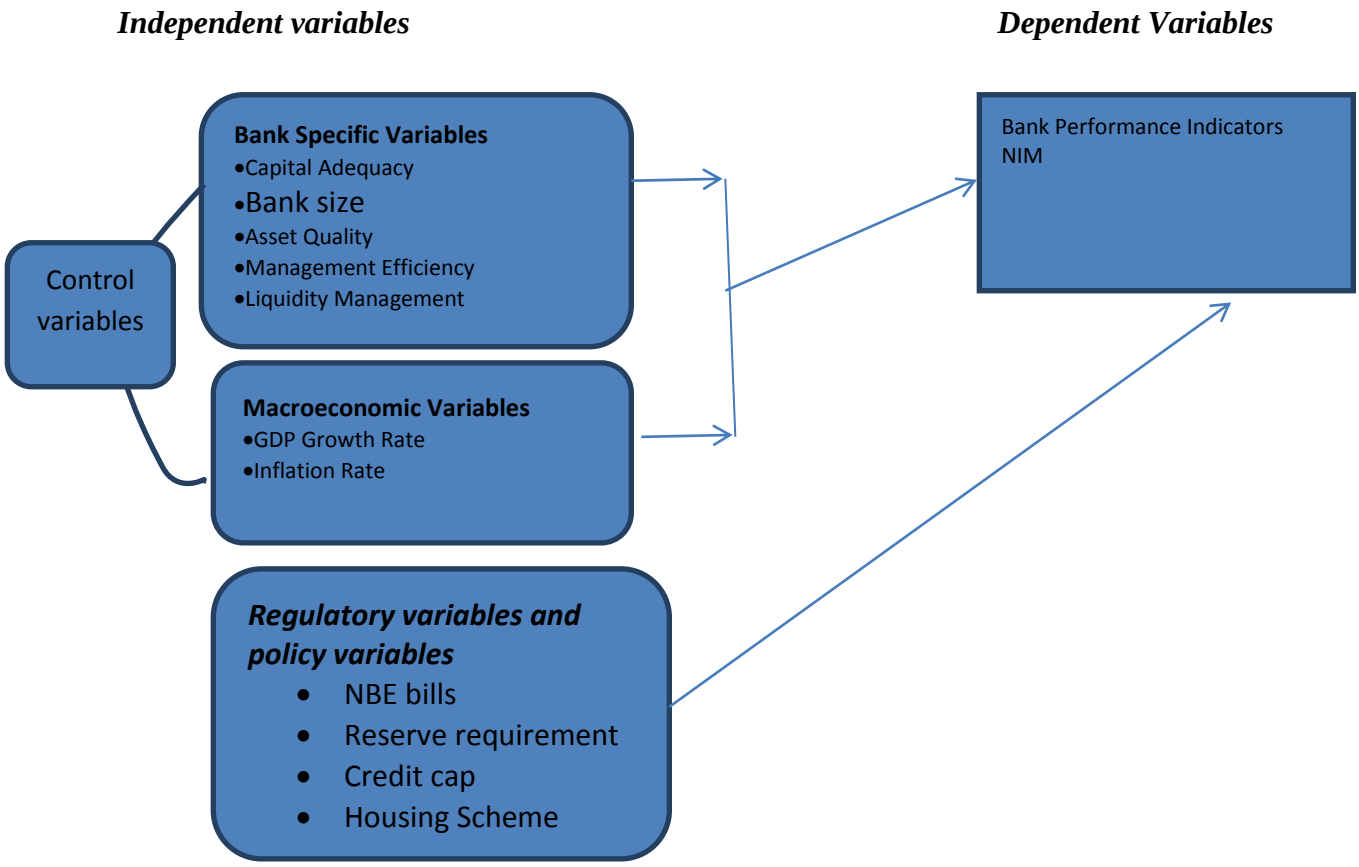
Where the subscripts *i* and *t* represent: respectively individual banks, and the time variable α is a constant term, β is coefficients for the respective variables, the dependent variable *I* represents bank interest margins .X^{B},X^{S},and $X^{M}$are respectively vectors of bank-specific variables, market structure variables and macroeconomic variables; ε represents the residuals. Accordingly the detail model is specified below.

Model

$$NIM = \beta_0 + \beta_1 NBEB \quad + \beta_2 CC + \beta_3 TOE + \beta_4 RR + \beta_5 ROE + \beta_6 HS + \beta_7 CPI + \beta_8 GDP + \beta_1 LR + \in$$

3.4.2 Description of variables

Figure 1Summary of the operational panel regression model



Source: National Bank of Ethiopia and MoFED

Dependent variables

Bank Performance Indicators

In order to be able to assess the effects regulation on the performance of banks it is important to define performance in relation to banks. Bank performance indicators are dependent variables. Bank performance means the efficiency of banks and it is measured by two alternatives. Cost of intermediation and profitability measures: Bank performance is usually measured by return on assets (ROA), Net Interest Margin (NIM) and return on equity (ROE)

Many studies have attempted to explain the contribution of a particular variable on the performance of banks. It should be noted that very often, the authors found different results even contradictory. This is mainly due to the different data they use, which covers different areas and periods. Thus, some authors have studied the performance data from several countries, such Molyneux et al.

***Cost of intermediation*:** is measured through Net Interest Margin/NIM/ which equals interest income minus interest expense divided by interest-bearing assets. The net interest margins measures the gap between what the bank pays the providers of funds and what the bank gets from firms and other users of bank credit. A decline in this ratio is interpreted as an increase in cost of intermediation (Naceur and Orman, 2008).

Net Interest Margin (NIM)

NIM is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest earning) assets. It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income in that time period (the average earning assets). The NIM variable is defined as the net interest income divided by total earnings assets (Gul et al., 2011). Net interest margin measures the gap between the interest income the bank receives on loans and securities and interest cost of its borrowed funds. It reflects the cost of bank intermediation services and the efficiency of the bank. The higher the net interest margin, the higher the bank's profit

and the more stable the bank is. Thus, it is one of the key measures of bank profitability. However, a higher net interest margin

Could reflect riskier lending practices associated with substantial loan loss provisions (Khrawish, 2011).

***Bank profitability*:** this is measured by the return on assets (ROA) and is calculated as the net income divided by total assets. The higher ROA, the higher the profitability will be. Bank profitability can be seen as indicator of the (in) efficiency of the banking system (Naceur and Orman, 2008).

Return on Equity (ROE)

ROE is also another major ratio that indicates the profitability of a bank. It is a ratio of Income to its total asset (Khrawish, 2011). It measures the ability of the bank management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution (Khrawish, 2011). Wen (2010), state that a higher ROE shows that the company is more efficient in using its resources.

Independent variables

Bank specific variables

As explained above, the internal factors are bank specific variables which influence the profitability of specific bank. These factors are within the scope of the bank to manipulate them and that they differ from bank to bank. These include capital size, size of deposit liabilities, size and composition of credit portfolio, interest rate policy, labour productivity, and state of information technology, risk level, management quality, bank size, ownership and the like.

Size (LTA)

As with many variables, the impact of size on bank performance is hotly debated among researchers. We use several proxies for bank-specific characteristics as follows: Bank size. This variable is set to be equal to the logarithm of total bank assets in millions of Birr. Size might be an important determinant of bank performance if there are increasing returns to scale in banking. However size could have a negative impact when banks become extremely large owing to bureaucratic and other reasons.

Total operating expense (TOE)

Management Efficiency is one of the key internal factors that determine the bank profitability. It is represented by different financial ratios like total asset growth, loan growth rate and earnings growth rate. Yet, it is one of the complexes subject to capture with financial ratios. Moreover, operational efficiency in managing the operating expenses is another dimension for management quality. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and others. Yet, some financial ratios of the financial statements act as a proxy for management efficiency. The capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios. One of this ratios used to measure management quality is operating profit to income ratio (Rahman et al. in Ilhomovich, 2009; Sangmi and Nazir, 2010). The higher the operating profits to total income (revenue) the more the efficient management is in terms of operational efficiency and income generation. The other important ratio is that proxy management quality is expense to asset ratio. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability (Athanasoglou et al. 2005).

Bank Equity: it refers to the book value of equity divided by total assets. Some theories (Berger, 1995 and others) suggest that well-capitalized banks are subject to less expected bankruptcy costs and hence lower cost of capital. According to this view, higher bank equity ratios may influence bank performance positively when loan rates do not vary much with bank equity.

Regulatory variables

Required reserve (RR)

Is a portion of bank's asset in National Bank of Ethiopia with no interest and it will be proxied by ratio of Reserve Account in NBE to total asset The researcher expects that it will have a negative effect on performance.

Credit cap (CC)

This refers a credit ceiling set by NBE. Since it is difficult to quantify the researcher has try to see its effect on performance through considering as dummy variable. (1 for time periods where credit cap was enforced 0 otherwise). The researcher expects that its effect will be similar with Reserve Requirement and NBE Bills.

NBE-Bills (NBEB)

Represent amount of forced bill purchase by a bank, which is measured as log of investment in NBE-Bills. The researcher expects that it will have a negative effect on performance, while it increases cost of intermediation (or decreases NIM).

Housing scheme (HS)

The housing scheme of Addis Ababa was launched on August, 2013. The objective of the scheme is to solve the acute shortage of housing in the city. The government of Ethiopia have implemented housing scheme in Addis Ababa city on different payment modalities 10/90, 20/80, 40/60 and housing associations. However the city administration awarded the operation to a government bank Commercial bank of Ethiopia and forbids the private commercial banks from collecting deposit for the Housing Scheme. The researcher would anticipate it will have negative effect on the profit of the private banks. One way that the researcher anticipate is those who used to be a customer of the private banks and willing to subscribe to the housing scheme will open a new account in the eligible government bank and thus starts to save in the same bank. This will reduce the deposit made at the private banks and decrease the interest income the private would get from lending the deposit and hence reduces their profit. The other way that the scheme affects the profit of the private bank might be a new potential customer that would open and account in the private banks under normal condition will be tempted and forced to open an account in the government owned and eligible bank to mobilize deposit for the housing scheme.

Liquidity ratio (*Liquidity Management) (LR)*

Liquidity is another factor that determines the level of bank performance. Liquidity refers to the ability of the bank to fulfil its obligations, mainly of depositors. According to Dang (2011) adequate level of liquidity is positively related with bank profitability. The most common financial ratios that reflect the liquidity position of a bank according to the above author are customer deposit to total asset and total loan to customer deposits. Other scholars

use different financial ratio to measure liquidity. For instance Ilhomovich (2009) used cash to deposit ratio to measure the liquidity level of banks in Malaysia. However, the study conducted in China and Malaysia found that liquidity level of banks has no relationship with the performances of banks (Said and Tumin, 2011).

External Factors/ Macroeconomic Factors

The macroeconomic policy stability, Gross Domestic Product, Inflation, Interest Rate and Political instability are also other macroeconomic variables that affect the performances of banks. For instance, the trend of GDP affects the demand for banks asset. During the declining GDP growth the demand for credit falls which in turn negatively affect the profitability of banks. On the contrary, in a growing economy as expressed by positive GDP growth, the demand for credit is high due to the nature of business cycle. During boom the demand for credit is high compared to recession (Athanasoglou et al., 2005). The same authors state in relation to the Greek situation that the relationship between inflation level and banks profitability is remained to be debatable. The direction of the relationship is not clear (Vong and Chan, 2009).

We use three proxies for macro-economic environment: inflation (INF), financial sector development (M2GDP) and GDP per capita growth. Previous studies have reported a positive association between inflation and bank profitability. High inflation rates are generally associated with high loan interest rates, and therefore, high incomes. However, if inflation is not anticipated and banks are sluggish in adjusting their interest rates, there is a possibility that bank costs may increase faster than bank revenues and hence adversely affect bank profitability. The GDP per capital growth is expected to have a positive impact on bank's performance according to the well-documented literature on the association between economic growth and financial sector performance.

Financial development indicators (FD): We also examine the impact of the level of financial development (FD) on the performance of the banking sector. Following Demirg .-Kunt and Detragiache (1998, 2002),We use a proxy for the level of financial development measured by the liquid liabilities / GDP.

3.5 Data Analysis Method

The study employs panel data analysis. In using panel data it is important to choose between fixed effect model and random effect model for this the necessary test will be employed. After the estimation of the model of interest using one of the model diagnostic tests of the model will be carried out to validate the result we get from the regression. All estimation is carried out using Eviews 9 software packages.

Chapter Four

4. Data Presentation and Analysis

To meet the broad research objective and to answer research questions and to test research hypotheses the researcher used the methodologies discussed in the preceding chapter. In this chapter the collected data were presented and important findings of correlation and regression analysis were discussed. The current chapter has five sections. Under the first section (section 4.1.) the descriptive statistics of the dependent and independent variables were presented followed by correlation analysis under section 4.2. Section 4.3 presents the test for the classical liner regression model/CLRM. Then, the results of the regression analysis were presented under section 4.4. Finally, discussions for the results of the regression analysis were made under section 4.5.

4.1 Descriptive Analysis of the Data

The descriptive statistics for the dependent and independent variables are presented below. The dependent variable is bank performance measured by cost of intermediation (NIM). The independent variables were classified in to three the bank specific and, macro-economic factors and regulatory variables which is considered as control variables. The regulatory variables were NBE Bill, Reserve requirement and Credit Cap which were used to see the impact of NBE regulations on banks performance.

Table 4.1 descriptive statistics of dependent and independent variables

	LNIM	NBEB	HS	CC	RR	ROE	CPI	LR	LTA	M2GDP	TOE	LGDP
Mean	5.5	4516.8	0.1	0.2	388.6	10.3	60.5	879.1	8.3	32.2	2.0	19.7
Median	5.8	2421.4	0.0	0.0	286.2	9.6	49.8	668.1	8.4	30.6	1.9	19.7
Maximum	7.2	26040.3	1.0	1.0	1769.8	30.0	129.7	3265.7	10.2	41.2	4.1	20.3
Minimum	2.9	806.8	0.0	0.0	6.7	4.7	22.9	30.8	5.5	24.4	0.2	19.2
Std. Dev.	1.0	6166.7	0.4	0.4	393.7	3.9	37.0	765.9	1.0	5.8	0.7	0.4
Observations	84	84	84	84	84	84	84	84	84	84	84	84

Source: National Bank of Ethiopia and MoFED and own computation using Eviews 9.

According to table 4.1 from the total of 84 observations the mean of NIM equals 5.5% with a minimum of 2.9 and a maximum of 7.28%.That means the most profitable bank of the sample banks earned 7.2 cents of net income from a single birr of asset investment. Most of the remaining banks from the sample earned an average of 5.5 cents from each birr invested by the banks.

Table 4.2 Correlation matrix among the dependent and independent variables

	LNIM	NBEB	HS	CC	RR	ROE	CPI	LR	LTA	M2GDP	TOE	LGDP
LNIM	1.00	-0.55	0.27	-0.34	-0.75	-0.29	0.72	0.76	0.92	-0.80	0.28	0.82

Source: National Bank of Ethiopia and MoFED and own computation using Eviews 9.

Output of correlation analysis (Table 4.2) represented in matrix of pair-wise correlation. This study has calculated correlation of dependent variables with bank specific, macroeconomic and regulatory variables. It was found that NIM is negatively correlated with reserve requirement, investment in NBE-Bills and credit cap with a correlation coefficient of -0.-0.75, -0.55 and -0.34 respectively.

4.2 Choosing Random effect (RE) versus fixed effect (FE) models

Panel Data Analysis

Panel data analysis combines the cross-section and time series dimensions for the same units of observations. It is the most superior form of data for analysis for a number of reasons

1. Can be used to account for individual heterogeneity
2. Helps capture cross-section specific attributes and time series properties of units (e.g. economies of scale and technological change in production analysis).
3. It gives more variability, more degrees of freedom, less co linearity among covariates, and more efficiency.
4. It minimized bias caused by aggregation in time series data.

The major aspect of the formulation of panel data models is the presence of unobserved heterogeneity that could be related to the covariates. This violates the $E(x_{it}, \in_{it}) = 0$ assumption which is necessary for the unbiasedness and consistency of the parameter estimates. Panel data has the benefit of addressing unobserved heterogeneity especially those constant overtime. Fixed Effects Models help account for these unobserved heterogeneity that are fixed over time. Another specification using panel data that has a strong assumption is Random Effects Model that assumes

that there is no correlation between the disturbance and the covariates. This is rather strong assumption and it requires convincing.

According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence the choice here is based on computational convenience. On this score, FEM may be preferable. Since the number of time series (i.e.14year) is greater than the number of cross-sectional units (i.e.6privatebanks), FEM is preferable in this case.

According to many text books such as Brooks (2008); Verbeek (2004) and Wooldridge (2004), it is often said that the REM is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a FEM is more plausible when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was not selected randomly and equals to the sample frame FEM is appropriate.

4.3. Testing assumptions of classical linear regression model (CLRM)

Test for absence of autocorrelation assumption (cov (*ui* , *uj*) = 0 for *i* _= *j*)

Assumption that is made of the CLRM about the disturbance terms is that the covariance between the error terms over time (or cross-sectional, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not correlated with one another, it would be stated that they are auto correlated or that they are serially correlated. A test of this assumption is therefore required.

To test if there is autocorrelation Q-statistics test is employed on the residual of the regression. In the statistics employed both autocorrelation and partial correlation is computed and the result found no sign of serial autocorrelation in the regression none of the probability at all lag is significant there for we cannot reject hetroscdacity of the null hypothesis.

Table 4.3 Autocorrelation

Date: 12/27/16 Time: 10:48

Sample: 2001 2014

Included observations: 84

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |*. |	. |*. |	1	0.107	0.107	0.9942	0.319
. | . |	. | . |	2	0.060	0.049	1.3077	0.520
.*| . |	.*| . |	3	-0.117	-0.130	2.5292	0.470
. | . |	. | . |	4	0.035	0.060	2.6407	0.620
. | . |	. | . |	5	0.042	0.048	2.8005	0.731
. | . |	. | . |	6	0.029	-0.003	2.8760	0.824
. | . |	. | . |	7	-0.022	-0.020	2.9223	0.892
. | . |	. | . |	8	0.006	0.020	2.9260	0.939
. | . |	. | . |	9	0.033	0.034	3.0306	0.963
. | . |	.*| . |	10	-0.060	-0.081	3.3804	0.971
.*| . |	.*| . |	11	-0.105	-0.094	4.4679	0.954
. | . |	. |*. |	12	0.034	0.081	4.5867	0.970

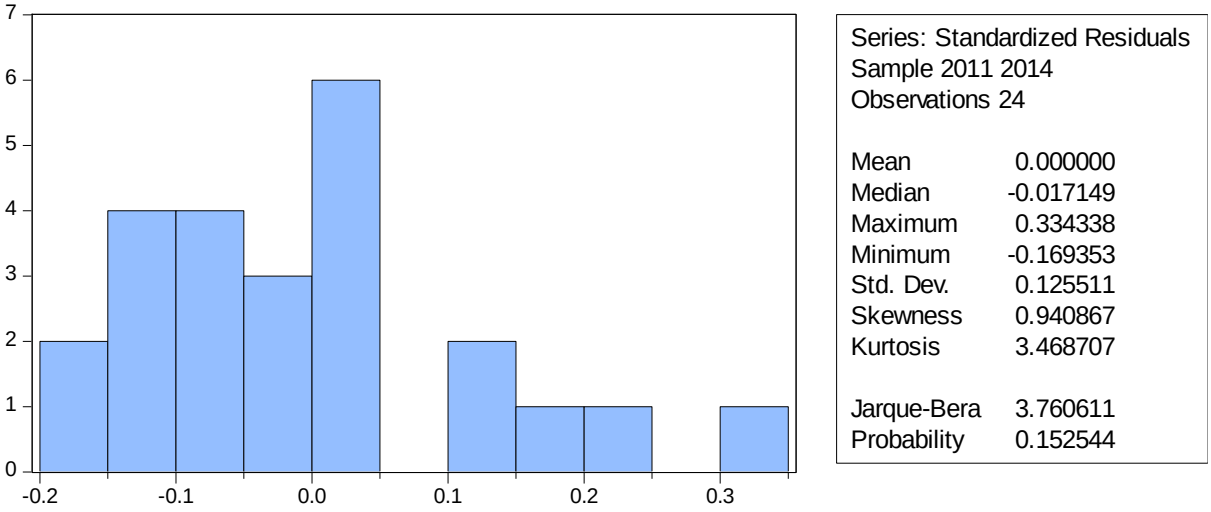
Test for Normality assumption (ut ~N(0, s2)

One of the assumptions of the CLRM is the residual or error is distributed normally with the mean zero and constant variance. A formal test employed for this test is Bera-Jarque. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how far the tails of the distribution are. The Bera-Jarque probability statistics/P-value is also expected not to be significant even at 10% significant level (Brooks 2008). According to Gujarati (2004), the JB is a large sample test and our sample of 84 was equal to the frame was large; we considered the JB test also.

As shown in the histogram in the table below the Jarque-Bera statistics was not significant even at 10% level of significance as per the P-values shown in the histogram in the table

(0.152544). Hence, the null hypothesis that is the error term is normally distributed should not be rejected and it seems that the error term follows the normal distribution.

Figure 2 distribution of the error term



Test for absence of series multicollinearity assumption

This assumption is concerned with the relationship exist between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brooks, 2008).

Multicollinearity condition exists where there is high, but not perfect, correlation between two or more explanatory variables (Cameron and Trivedi 2009; Wooldridge 2006). According to Churchill and Iacobucci (2005), when there is multicollinearity, the amount of information about the effect of explanatory variables on dependent variables decreases.

As a result, many of the explanatory variables could be judged as not related to the dependent variables when in fact they are. This assumption does allow the independent variables to be correlated; they just cannot be perfectly correlated. If we did not allow for any correlation among the independent variables, then multiple regressions would not be very useful for econometric analysis. How much correlation causes multicollinearity

however, is not clearly defined. While Hair et al (2006) argue that correlation coefficient below 0.9 may not cause serious multicollinearity problem.

Malhotra (2007) stated that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. Kennedy (2008) suggests that any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results. This indicates that there is no consistent argument on the level of correlation that causes multicollinearity.

According to Gujarati (2004), the standard statistical method for testing data for multicollinearity is analyzing the explanatory variables correlation coefficients (CC); condition index (CI) and variance inflation factor (VIF). Therefore, in this study correlation matrix for nine of the independent variables shown above in the table had been estimated.

Table 4.4 correlation matrix

	LNIM	**NBEB**	**LR**	**CC**	**CR**	**RR**	**ROE**	**TOE**	**HS**	**CPI**	**LGDP**
LNIM	1										
NBEB	-0.112	1									
LR	0.292	-0.225	1								
CC	-0.010	-0.148	-0.197	1							
CR	-0.672	-0.056	-0.115	-0.006	1						
RR	0.573	-0.374	0.539	0.249	-0.173	1					
ROE	0.124	0.196	-0.672	0.469	0.038	-0.092	1				
TOE	-0.138	0.395	-0.714	0.111	0.104	-0.480	0.548	1			
HS	-0.437	0.250	0.183	-0.447	0.187	-0.470	-0.487	-0.208	1		
CPI	-0.316	0.310	0.200	-0.683	0.217	-0.609	-0.435	-0.020	0.591	1	
LGDP	-0.424	0.315	0.249	-0.579	0.258	-0.592	-0.467	-0.086	0.469	0.198	1

Source: NBE and MoFED and own computation

The results in the above correlation matrix show that the highest correlation of 0.591 which is between housing scheme and inflation. Since there is no correlation above 0.7, 0.75 and

0.9 according to Kennedy (2008), Malhotra (2007) and Hair et al (2006) respectively, we can conclude that in this study there is no problem of multicollinearity.

4.4. Results of the regression analysis

On the regression out puts the beta coefficient may be negative or positive; beta indicates that each variable's level of influence on the dependent variable. P-value indicates at what percentage or precession level of each variable is significant. R^2values indicate the explanatory power of the model and in this study adjusted R^2value which takes in to account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

Model one:-the panel regression model used to find the statistically significant regulatory variables impact on banks performance measured by NIM was:

$$NIM = \beta_0 + \beta_1 NBEB \quad + \beta_2 CC + \beta_3 TOE + \beta_4 RR + \beta_5 ROE + \beta_6 HS + \beta_7 CPI + \beta_8 GDP + \beta_9 LR + \beta_{10} M2GDP + \beta_{11} LRSZ \in$$

Table 4.5 regression output for model

Variables	Coefficient	Std. Error	t-statistics	Prob.
C	-2.49501	8.973799	-0.27803	0.7818
NBEB	-0.555853	0.208032	2.671957	0.0093
CC	-0.27081	0.099583	-2.71946	0.0082
RR	0.000128	0.000215	0.598549	0.5514
HS	-0.2704	0.143716	-1.88147	0.064
LR	-0.00029	0.000132	-2.19519	0.0314
TOE	0.098683	0.051109	1.930832	0.0574
ROE	0.034128	0.010288	3.317259	0.0014
SZ	1.394519	0.110524	12.61732	0

LGDP	-0.0763	0.480489	-0.15879	0.8743
CPI	-0.01953	0.005279	-3.69975	0.0004
M2GDP	-0.04002	0.014727	-2.71732	0.0082

R-squared	0.94942
Adjusted R-squared	0.94170
F-statistic	12.885
Prob. (F-statistic)	0

Source: Balance sheet and income statement of sampled commercial banks and own computation.

The above table presents results of net inters margin (NIM) as dependent variable and bank specific and macroeconomic (control) and regulatory variables as explanatory variables for the sample of six private banks in Ethiopia. The adjusted R- squareis95%, which means 95% of the total variability of net interest margin about their mean value is explained by the model. Thus a model is sufficient to explain variability of NIM. The regression *F*-statistic takes a value12.885 F-statistics tests the null hypothesis that all of the slope parameters (βs) are jointly zero. In the above case *p*- value of zero attached to the test statistic shows that this null hypothesis should be rejected even at1% level of significance.

As it is shown in the above table among the regulatory variables NBE bill, Credit Cap, required Reserve and Liquidity Ratio were all statistically significant regulatory variables affecting profitability of private banks in Ethiopia. Reserve Requirement had a positive and statistically insignificant impact on NIM even at 10% level of confidence. NBE bill has a negative and significant impact on NIM at 1% level of confidence. Credit cap, Liquidity ratio and including policy variables Housing Scheme have negative and significant impact on profit of private banks in Ethiopia at 1 %, 5% and 10% level of significance.

Among control variables from bank specific variables Size had appositive effect and it is statistically significant at 1%, equity becomes positively and statistically significant at1%

confidence level. From macroeconomic factors inflation and financial sector development positively affect NIM both at 1% level of significance whereas GDP were found insignificant to explain profitability of private banks in Ethiopia. In an attempt to estimate Model Two we have failed to get a meaning full result and thus the researcher abandon the model and stick to explain only Model one. Hence all the analysis in this paper is confined to relationship between the regulatory, control, and profitability of private banks peroxide by Net Interest margin.

4.5. Discussion of the regression results

Regulatory variables

The research attempted to estimate the impact of regulatory variables controlling for bank specific and macroeconomic variables. As shown in the table 4.5 above, the model estimates four regulatory variables that are used in this study namely investment in NBEBills, reserve requirement and creditcap and Liquidity ratio and one policy variable called housing scheme dummy. The result of regression output is discussed one by one as follows.

- **Investment in NBE Bills and Profitability**

According to Table 4.5 investment in NBE-Bills is negatively related with profitability (NIM) with a coefficient estimate of -0.555853. Holding other factors constant, a100% increase in investment in NBE Bill reduces NIM by 55.6% and the p value of NBB (i.e.0.0093) reveals that it is statistically significant at 1% level of significance and also it was in line with the hypothesis stated in chapter one. This is because the net income that agiven bank gain decreaseas almost one third of the total loan that a bank gives to borrowers is invested in government bill.

As investment in NBE Bills increase, banks will lose a benefit if it would have invested in relatively high interest bearing assets, like giving loans to borrowers with an interest rate of at least 12% but NBE Bills generate only 3% return which results in an opportunity cost of 9%.

- **Credit Cap and Profitability**

The result from the estimation of the model shows that there exist a negative and

statistically significant relationship between credit cap and net interest margin with the coefficient estimates of-0.27081 and the p value was 0.0082 which was highly significant at 1% level significance. Holding other factors constant, during the credit cap period the profitability of banks has decreased by 27%.

The reason for the indirect relationship between profitability of banks and credit cap is, during regulation taken by the National Bank of Ethiopia not to give loan above credit ceiling this has hampered interest income inflow from loans. However, the banks will pay an interest expense of the same amount before the credit cap policy for the depositors regardless of their interest income. This result was consistent with our expectation.

- **Reserve Requirement and profitability**

Theoretically we expect a negative relationship between required reserve and banks profitability. Because required reserve is a non interest bearing deposit of some of the proportion of deposit of customers at the National Bank of Ethiopia. The banks would have earned an interest rate income if they were allowed to lend or invest the equivalent amount of money on interest bearing investment. The result form the regression shows there is no statistically significant relationship between required reserves and profitability of banks in Ethiopia.

- **Liquidity ration and profitability**

Liquidity refers to the ability of the bank to fulfil its obligations, mainly of depositors. According to Dang (2011) adequate level of liquidity is positively related with bank profitability. However in this study we found a negative relationship between liquidity ratio and bank profitability measured in terms of Net interest margin. The coefficient estimates of-0.00029 and the p value was 0.0314 which was highly significant at 5% level significance. Holding other factors constant, an increase a100% in the liquidity ratio measured by cash to deposit ratio of banks decreases the profitability of banks has decreased by 27%.

- **Housing scheme and bank profitability**

In the regression model a housing scheme policy was included, which prohibits private banks from collection of deposit for the housing scheme of Addis Ababa and allows a

government bank only. As it is expected it is found that the housing scheme has a negative impact on the profitability of private banks. This might be due to a customer of private bank may switch or ceases to save in the private banks to the government banks if they subscribe to the scheme. Accordingly the policy introduction of Addis Ababa housing scheme decreases the profitability of private banks by 27% at 10 percent level of significance (see table 4.5).

Control variables

The researcher used two major control variables in both regression models namely; bank specific factors and macroeconomic factors. Bank specific factors proxies were size, credit risk, and efficiency and the Macroeconomic factors were proxy with inflation and GDP.

- **Operating efficiency**

Operating efficiency proxy of management quality is taken as a ratio expense to asset. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. The coefficient estimates of-0.098683 andthepvaluewas0.0574 whichwashighlysignificantat10% significance level. Holding other factors constant, an increase a100% in the increase in ratio of operating expense to total asset decreases the profitability of banks by decreased 9.87% (see table 4.5).

Bank equity and profitability

Some theories (Berger, 1995 and others) suggest that well-capitalized banks are subject to less expected bankruptcy costs and hence lower cost of capital. Accordingly our result shows a positive and statistically significant relationship. Holding other factors constant, an increase a100% in the increase in ratio of operating expense to total asset decreases the profitability of banks increased by 10.3%.

- **Bank size**

This variable is set to be equal to the logarithm of total bank assets in millions of Birr. Size might be an important determinant of bank performance if there are increasing returns to scale in banking. In the regression result shown above in table, (table 4.5) Confirms this hypothesis big banks enjoy a high profit in Ethiopia. It is significant at 1% level of

significance if a banks increases there size by 100% on average there profit will increase by 139.5%.

Macroeconomic Indicators

Among the macroeconomic indicators inflation and financial sector development proxy by M2 to GDP ratio are found to be significant in explain the profitability of private banks in Ethiopia at a significance level of 1%. However log of GDP a proxy for economic growth has found to insignificant in the profitability of bank equation. According to some theories, if inflation is not anticipated and banks are sluggish in adjusting their interest rates, there is a possibility that bank costs may increase faster than bank revenues and hence adversely affect bank profitability. Our result confirms this hypothesis inflation reduce bank profitability in Ethiopia. Financial sector development and bank profitability measured in terms of NIM have opposite relation. This may show that as the financial sector development increases in increases competition this in turn reduces the gain from interest rate.

Chapter Five

Conclusion and Recommendations

5.1 Conclusion

The objective of this paper was to analyse the effect of regulatory actions taken by the National Bank of Ethiopia on the profitability of six private commercial banks in Ethiopia. For our case at hand three regulatory variables affecting banks performance were chosen and analysed. The panel data was used for a sample of six private commercial banks in Ethiopia from 2001 to 2014. Data was presented by using descriptive statistics. Before performing OLS regression the models were tested for the classical linear regression model assumptions, the models fulfil all assumptions of the CLRM. Fixed effect model/FEM was used based on convenience. Variables were classified in to three as regulatory, bank specific and macroeconomic, the latter two were control variables. From the list of possible explanatory (i.e. regulatory) variables, most of them are statistically significant and the results of models enable us to make following conclusions.

- NBE-Bill purchase has negative and significant effect on banks performance measured through Net Interest Margin. The researcher concludes that investment in NBEBills results a negative impact due to the lesser amount of interest rate compared to the amount of interest rate if the amount invested on the Bill was invested on other investments.
- Change in reserve requirement has no statically significant effect on the banks cost of intermediation measured through Net Interest Margin.

- Credit cap has negative and statistically significant effect on banks performance measured through Net Interest Margin. The researcher concludes that credit cap has a negative impact on banks performance and this is due to the fact that under credit celling policy, interest income generated from loans will decrease but the bank will pay an interest expense for the depositors no matter what amount the banks get an interest income from the loan.

5.2 Recommendation

Based on the findings of the research and the conclusions made the following recommendations are forwarded:

NBE requires each bank to purchase bill which is 27% of their total loan with 3% interest rate. This in turn affects banks profitability, therefore it is better if policy makers minimize either the percentage of total loan required to purchase the bill or increase the interest rate paid for the bill.

For banks they need to exert their maximum effort to mobilize deposit and use aggressive branch opening strategy, in order to mobilize substantial amount of deposits and increase their market share and it is advisable to open many branches in strategic areas of both in the capital city and outline areas of the country.

Though the credit cap was already removed the result from the regression shows it had a negative impact performance of private banks. Because such regulatory variables increase cost of intermediation which creates the ultimate burden on customers, NBE has to consider the effect of such policy on banks profitability and their overall performance.

On the other hand banks need to increase operating efficiency to trade off such effects and

to serve their customers as usual to create long-lasting relationship when such kinds of regulations are imposed.

Finally, regulatory bodies need to consider the far-reaching effect of increase in cost of intermediation as a result of such frequent regulatory changes. Because, banks tend to transfer such costs to their customer which in turn increases cost of getting finance. The higher the cost of finance, the higher its effect on investment would be. Due to this the country at large would be affected. If investment becomes worse because of increase in cost of finance, production and employment opportunity will be affected negatively.

Last but not least the housing scheme policy that the government has taken has negative impact on the performance of private banks. This policy measure might increase the deposit of Commercial Bank of Ethiopia which is government owned bank and eligible for collecting the deposit for the housing scheme. The result might be low share of deposit by private banks which intern decreases loan by the private banks and hence low income.

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