THE EFFECT OF BANK REGULATION ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

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January, 2017

Addis Ababa, Ethiopia

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A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF ACCOUNTING AND FINANCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR DEGREE OF MASTERS OF SCIENCE IN ACCOUNTING AND FINANCE.

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January, 2017

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Declaration

I, AddisuAnagaw, hereby declare that the thesis work entitled "The effect of bank regulation on profitability of private commercial banks in Ethiopia" submitted by me for the award of the degree of Masters of Science in Accounting and Finance of Addis Ababa University at Addis, Ethiopia, is my original work and it has never been presented in any university. All sources and materials used for this thesis have been duly acknowledged.

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Certification

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This is to certify that the thesis prepared by Addisu Anagaw entitles: **The effect of bank regulation on profitability of private commercial banks in Ethiopia** and submitted in partial fulfillment of the requirements for the degree of masters of Science in accounting and finance compiles with the regulations of the university and meets the accepted standards with respect to originality and quality.

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Acknowledgment

My deepest and heartfelt thank goes to the Almighty God and his mother St. Marry, who followme in all aspect of my life.

First, I would like to express my deepest gratitude to my advisor, ***AbebawKassie (PhD)***, for his

support, encouragement, invaluable comments, advice and guidance at various stages of my study. Thank you very much!!!

I would also like toextend my deepest gratitude for my buddy Daniel Sisay for his immeasurable assistance throughout my study.

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List of Acronyms

AB	Abay Bank
AIB	Addis International Bank
AIB	Awash International Bank
ARCH	Autoregressive Conditional Heteroscedasticity
BIB	Birhan International bank
BIB	Bunna International Bank
BOA	Bank Of Abyssinia
BZ	bank size
CA	capital adequacy
CBO	Cooperative Bank OfOromia
CLRM	Classical Linear Regression Model
CR	Capital requirement
DB	Dashen Bank
DGB	Debub Global Bank
dL	Durbin critical lower value
dU	Durbin critical upper value
DW	Durbin–Watson

EB	Enat Bank
EI	equity investment
JB	JarqueBera
LIB	Lion International Bank
LRR	legal reserve requirement
MENA	Middle East and north Africa
NBE	National Bank Of Ethiopia
NBE	National Bank of Ethiopia
NBEB	NBE bill purchase requirement
NIB	Nib International Bank
OIB	Oromia International Bank
OLS	Ordinary Least Square
ROA	Return on Assets Ratio
ROAA	Return On Average Asset
ROAE	Return On average Equity
UB	United Bank
WB	Wegagen Bank
ZB	Zemen Bank

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Abstract

This study empirically examines the effect bank regulation on performance of private commercial banksin Ethiopia and interprets the result by relating with the regulations. The studyused balanced panel model in examining the regression model and collect data from sevenprivate commercial bankscovering the period of eleven (11)consecutive years, 2005-2015. To this end, the study employed a quantitativeresearch approach by documentary analysis based on their audited financial statement. The study used one dependent variable return on asset (ROA), five independentvariables that are equity investment, legal reserve requirement, capital requirement, Capital adequacy and bank size.The regression result showedthat capital requirement and bank size had a positive and significant effect on profitability of private commercial banks. Capital adequacy and reserve requirement had negative and significant effect on profitability. Equity investment had negative but insignificant effect on performance of private commercial banks in Ethiopia. The research provides evidence of majorityvariables used to measurebank regulationhas an effect on profitability of Ethiopian private commercial banks. Hence, the study recommendsthat Ethiopian private commercial banks should give due attentionon bank regulationto enhance their profitability significantly.

Key words: - *Bank, Bank regulation and Performance*

CHAPTER ONE:INTRODUCTION

Background of the study

The banking system around the globe has been in recent years going through some of the most intense criticism and scrutiny. In part many believe the lack of regulations and supervisory structures have brought the world to a brink of financial collapse, while on the opposite side of that coin many believed the years of prosperity the world had experienced just prior to the collapse were largely in part due to the deregulation or lack of regulation hence a near free market with regard to the financial sector (Reinhart et al, 2008; Brunnermeieret al, 2009).Spong (2000) from the Federal Reserve Bank of Kansas City highlights a few important reasons for introducing bank regulations. The most basic reason for introducing regulations is to protect depositors from undue risks to their deposits. Businesses and individuals alike hold significant portions of their funds in banks and there are valid concerns from them with regards to protection of their funds. As a result, authorities respond to such concerns with regulations attempting to protect the bank depositors.

The special role that banks play in the economic system implies that banks should be regulatedand supervised not only to protect investors and consumers but also to ensure systemic stability.More specifically, bank regulations exist for safeguarding the industry against systemic risk,protecting consumers from excessive prices or opportunistic behavior and finally to achievesome social objectives, including stability (Llewellyn, 1999).

Banking regulations can generally be defined as the frameworks controlling the creation, operation and liquidation of banks in an economy. These regulations are put in place by Central Banks and finance ministries and the control is exerted usually through monitoring

carried out by specialized banking supervisory authorities. Meanwhile, with enormous amounts of transactions conducted daily by businesses andindividuals, a stable framework is required to ensure smooth and acceptable methods of thepayments system are in place in an economy (Nafis, 2012).

Bank regulations try to provide this stableframework which seeks to assure certainty and safety to users of the banking payment systemwhich is critical for the wellbeing of the economy. Moreover, apart from maintaining publicconfidence, banking regulations also try to create a regulatory environment where banks areexpected to be efficient and competitive; and are also expected to provide reasonable levelsof banking services throughout the economy (Nafis, 2012).

A general contagious phenomenon appeared to affect several banking systems because of their excessive risk position and theirinvolvement with different subprime products and derivatives. In order to save the banking systems, governmentsand policymakers put forward several programs, but the latter were not enough and the banking crisis was moresevere and rapid than previously expected. Consequently, many banks lost money and some of them went bankrupt.Financial analysts consider that delayed reactions, the status of the central banks and the absence of a centralizedbanking policy and financial regulations made the interventions less efficient and the crisis more severe. In addition,the decentralized government actions gave rise to more serious debt crises, particularly for European countries,involving serious sovereign risk (Barth et al., 2013). Accordingly, reforming the banking system, and improvingfinancial regulations and supervision were considered more important than ever to protect banks and the economyfrom future shocks (Aglietta, 2009).

Last but not least regulation isimportant for the efficiency of the banking industry. In this respect, it is noticeable that wheneverregulation is implemented with the aim of restricting or limiting banking activities, the banks‟conduct of business and the efficiency with which they operate will be affected. This in turncould induce banks to engage in riskier activities and /or to invest in ways to circumventregulation. According to some studies, it could even ultimately affect economic growth (Jalilianet al., 2007).

Regulations for banks are being rewritten in response to the globalfinancial crisis, their implementation requires complex steps depending on each country‟spolicies and they could have very different effects on bank profitability depending on institutional environment where banks operate. Furthermore, the existing empirical evidenceis inconclusive about the impact of regulatory and supervisory policies on bank performance (Faten, 2013). Thus, the concern of this study is to examine the effect of bank regulation on private commercial banks.

1.2 Statement of the Problem

The financial sector is one of the most heavily regulated sectors in the economy and banking is by far the most heavily regulated industry. Bank regulation typically refers to the rules that govern the behavior of banks, whereas supervision is the oversight that takes place to ensure that banks comply with those rules. The issue of financial regulation particularly in relation to the banking sector is often considered a controversial issue. Regulation is costly and can give rise to moral hazard problems. In addition distortions between regulated and unregulated institutionscan occur (Barth et al., 2006).

Barth et al. (2004) find that increasing the level of restrictions move together with crises. Similarly, more restriction comes with lower level of bank development. However, they do notprovide a clear-cut explanation on the nature of relationship. While, I expect that regulators areill-equipped with crises for a number of reasons, the direction of causality requires more work. Itis our expectation that causality works both ways. Powerful regulators may not correctly findproblems and cures for them. On the other hand, expected crises provide more reasons to control.

In accordance with 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. This monetary policy refers to a bundle of actions and regulatory stances taken by the central bank including; setting minimum interest rates on deposits or the rediscount rate charged to Commercial banks, borrowing reserves, setting reserve requirements on various classes of deposits, increasing or decreasing commercial bank reserves through open market purchases or sales of government securities. Furthermore, regulatory actions to constrain commercial bank financial activity or to set minimum capital requirements, intervention in foreign exchange markets to buy and sell domestic currency for foreign exchange and decide on thelevel of required reserve of commercial banks total deposit.

In Ethiopia, National Bank exercises control over the banking sector through issuance of directives pertaining formation and operation of a banking business. Most of the directives on operation aim at reducing risk of liquidity and solvency in the banking system. Some of NBE‟s directives are issued as part of the central bank‟s conduct of monetary policy and some are issued to ensure that the sector plays adequate role in channeling funds to priority sectors of the economy. Most notable action by NBE is its revision of the reserve requirement to combat skyrocketing inflation in the country. The bank revised the reserve requirement from 5% to 10% in 2007 (NBE directive NO.SBB/42/2007) and to 15% in 2008 (NBE directive NO.SBB/45/2008).

The national bank of Ethiopia had regulated new directive that forced private banks to invest inNBE bill in order to support other sectors. Prior studies conducted in Ethiopia are mainly on theeffect of this regulation. There are a number of studies conducted on the effect of NBE Bill purchaseYodit(2012), Eden(2014), Tesfaye(2015) and Shibiru(2014). They do not consider on equity investment and capital requirement regulation. Thus, incorporating these crucial bank regulation variables collectively is what motivated the researcher to put his own role to examine how profitability of Ethiopian private commercial banks has been affected by NBE regulation.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of the study is to examine the effect of bank regulation on profitability of private commercial banks in Ethiopia.

1.3.2. Specific Objectives

The specific objectives of the study are

- To examine the effect of legal reserve requirement on profitability of private Ethiopian commercial banks.
- To examine the effect of capital requirement on profitability of private Ethiopian commercial banks.
- To examine the effect of equity investmenton profitability of private Ethiopian commercial banks.

1.4. Research Questions

RQ1: What is the effect of legal reserve requirement on profitability of private commercial banks in Ethiopia?

RQ2: What is the impact of capital requirement on profitability of private Ethiopian commercial banks?

RQ3: How equity investment affects profitability of private Ethiopian commercial banks?

1.5. Significance of the Study

The study has the following significance for policy makers, companies and other stakeholders: It will enable policy makers to take deep-considerations on the impactregulations have on banks profitability during policy formulation andimplementation. The result of this study will create awareness for banks about the effect ofNBE regulation on their profitability; give the opportunity to influence NBEby 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 itspolicy regulation after carefully evaluating its impact.

1.6. Scope and limitation of the Study

This research mainly concentrated on the effect of bank regulation on profitability of private Ethiopian commercial banks. The researcher includes private commercial banks establishedin Ethiopia and made the analysis using secondary source of data. The study had taken in to account the profitability of banks for the last 11 years that is from 2005 to 2015. As a result, theresearch included Ethiopian private commercial banks that are started their operation on and before 2005, which are 7 private commercial banks who operate in Ethiopia.

The researcher has taken the cross sections based on market share regarding number of branch and capital held by all Ethiopian private commercial banks that can refer more than 69% of the total population. The study used five variables i.e. equity investment, legal reserve requirement and capital requirement. Capital adequacy and bank size was also taken

into consideration as a control variable.As a result, these variables could explain the topic properly by referring previous empirical works.

The study is limited to examine the effect of the regulatory variables on banks profitability, which are applied by the National Bank of Ethiopia, observed for eleven consecutive years (2005-2015). The limitation that was faced by the researcher is lack of literature in National Bank regulations and its effect on private commercial banks profitability in Ethiopia.

1.7. Organization of the Paper

This research report is prepared in to five chapters. Chapter one provides the general introduction, statement of the problem, research objective, significant andscope of the study. Chapter two describes the review of related theoretical and empiricalliterature. Chapter three provide detail description of the methodology employed in the research.Chapter four contains data presentation, analysis and interpretation. Finally, the last chapterconcludes the total work of the research and gives relevant recommendations based on thefindings.

CHAPTER TWO:LITERATURE REVIEW

2.1. Theoretical Literature

In explain the relationship between regulation and commercial banks profitability, severaltheories have been advanced. Banking regulations have attracted both theoretical and empiricalinterest and several studies attempt to assess whether and how the regulatory frame work influences the profitability and behavior of banks.

2.1.1. Overall Regulation

According to Coglianese (2012) the word "regulation" itself can mean many things and has beendefined variously by various researchers. At its most basic level," regulation" is treated assynonymous with law .They are rules or norms adopted by government and backed up by somethreat of consequences, usually negative ones in the form of penalties. According to Orbach(2012) regulation is state intervention in the private domain, which is a byproduct of ourimperfect reality and human limitations.

Regulation is defined as the public administrative policing of private activities based on a set ofrules that were developed in the public interest. When the definition is applied to the financialsystem, it is termed financial regulation and refers to a process in which there is a monitoring ofthe financial institutions by a body that is directed by the government in an effort to achievemacroeconomic goals through monetary policies as well as other measures permissible by law.Thus regulations are concerned, they must be extensively considered and skillfully administeredbecause in appropriate or ineffective regulatory measures results in catastrophic economic problemsGreenidge (2006).

Kirkpatrick (2004) defined regulation as the diverse set of instruments by which governments setrequirements on enterprises and citizens. Regulations include laws, orders and rules issued by alllevel of governmental bodies to which governments have delegated regulatory powers.Regulation can take many forms and the form of regulation policy adopted in developingcountries has shifted over the time. Regulations touch our everyday life in thousand ways that we may never imagine (Brito, 2012).

2.1.2. Bank Regulation

Banking regulation in its strictest sense refers to the framework of law and rules under which banks operate Banking law and regulation extend to various aspects of banking, including whocan open banks, what products can be offered and how banks can expand Kenneth, (2000).

Prudential banking regulation is designed to protect the banking system from crises because banking crises typically affect the entire economy. The most important rationale for regulation inbanking is to address concerns over the safety and stability of financial institutions, the financialsector as a whole, or the payments system Bonn, (2005).

2.1.3. Why Banks are regulated

According to Kenneth (2000) banks are operated for profit and bankers are free to make manydecisions in their daily operations, banking is commonly treated as a matter of public interest.Banking laws and regulations extend too many aspects of banking, including who can openbanks, what products can be offered, and how banks can expand. No central architect wasassigned to design the overall system or lay out a single set of principles.

Instead, many peoplewith many viewpoints, objectives, and experiences have been responsible for the currentsupervisory framework. As a consequence, bank regulation has evolved to serve numerous goalswhich have changed over time and on occasion even been in conflict with one another. According to Keneth (2000), the following are why banks are regulated. Also, because of thepotential for conflict among regulatory goals, special attention is given to what bankingregulation should not do.

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. Bankingposes a number of unique problems for customers and creditors. First, many bank customer‟s use a bank primarily when writing and cashing checks and carrying out other financial transactionsKeneth (2000).

To do so, they must maintain a deposit account. As a consequence, bank customers assume therole of bank creditors and become linked with the fortunes of their bank. This contrasts withmost other businesses, where customers simply pay for goods or services and never becomecreditors of the firm. A second problem for bank depositors is that under the fractional reservesystem of banking, deposits are only partially backed by the reserves banks hold in the form ofcash and balances maintained with the Federal Reserve.

As a result, depositor safety is linked tomany other factors as well, including the capital in a bank and the condition and value of itsloans, securities, and other assets. While depositors could conceivably make general judgmentsabout the condition of banks, the task would still be difficult, costly, and occasionally prone toerror. These facts, especially when combined with the history of depositor losses before federaldeposit insurance, explain much of the public pressure for banking regulation to protectdepositorsKeneth (2000).

Monitory and financial stability

Apart from just being concerned about individual depositors, banking regulation must also seekto provide a stable framework for making payments. With the vast volume of transactionsconducted every day by individuals and businesses, a safe and acceptable means of payment iscritical to the health of our economy. In fact, it is hard to envision how a complex economicsystem could function and avoid serious disruptions if the multitude of daily transactions couldnot be completed with a high degree of certainty and safety. Ideally, bank regulation should thuskeep fluctuations in business activity and problems at individual banks from interrupting theflow of transactions across the economy and threatening public confidence in the bankingsystemKenneth (2000).

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 bankingservices throughout the economy. Efficiency and competition are closely linked together (Barth et. al 2006).

In acompetitive 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, individualbanks might attempt to gain higher prices for their services by restricting output or colludingwith other banks. Competition is also a driving force in keeping banks innovative in theiroperations and in designing new services for customers. A further consideration is that forresources throughout the economy to flow to activities and places where they are of greatestvalue, competitive standards should not differ significantly across banking markets or betweenbanking and other industries(Barth et. al 2006).

Consumer protection

Another goal of banking regulation is to protect consumer interests in various aspects of a banking relationship. The previous 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 bankingactivities. These additional forms of protection have been implemented through a series oflegislative acts passed over the past few decadesBhattachyra (1998).

Bank Supervisory Role of the Central Bank

Countries must also decide whether to assign responsibility for bank supervision to the central bank. As with the issue of single or multiple bank supervisors, the conceptual literature is split Perhaps the most strongly emphasized argument in favor of assigning supervisory responsibility to the central bank is that as a bank supervisor, the central bank will havefirst-hand knowledge of the condition and performance of banks(Barth et. al 2006).

This in turn can help itidentify and respond to the emergence of a systemic problem in a timely manner. Thosepointing to the disadvantages of assigning bank supervision to the central bank stress theinherent conflict of interest between supervisory responsibilities and responsibility for monetary policy (Barth et. al 2006).

The conflict could become particularly acute during an economic downturn, in that the central bank may be tempted to pursue a too-loose monetary policy to avoid adverse effects on bank earnings and credit quality, and/or encourage banks to extend credit more liberally than warranted based on credit quality conditions to complement an expansionary monetary policy. As with the single-multiple bank supervisor debate, a useful first step in addressing the debate over the bank supervisory role of the central bank is to ascertain basic facts (Barth et al., 2006).

2.1.4. The financial regulations

Financial regulation can be classified into groups according to their aims and functions. The three most common classifications are the following; which are outlined in (Williams, 1996).

- Structural regulations: - are boundaries placed on commercial banks determining the activities in which they can participate from those from which they are debarred. Licensing of commercial banks and prohibitions from engaging in commercial activities, are examples of structural regulations used.
- Monetary regulation: - is the process of setting monetary policy directives designed to bring about predetermined macroeconomic outcomes by focusing on interest rates, credit controls and primary and secondary reserve requirements. It impacts on the deposit taking and lending activities of commercial banks through adjustments in price, volume, portfolio change and risk taking.

2.1.5. The impact of regulatory measures

Regulations impact on the very structure of the banking system since they present the stipulations and restrictions that must be considered in the banks entire series of operations. But in terms of optimality, it remains to be answered whether all the restrictions in place are necessary. Bhattachyra (1998) had some notable conclusions when he set out to survey modern literature on bank regulation, exploring the implications for optimal regulation.

Among the conclusions were:

I. Imposing restrictions on banks investment may limit the liability of the depositinsurance fund, affecting the optimal configuration of banking and may reducecharter values as a result.

II. Risk sensitive capital requirements and risk calibrated deposit insurance premia are potentially useful regulatory tools in coping with moral hazard.

III. If bank closure policy is improved and discipline brought to bear, it could attenuate the moral hazard problems related to deposit insurance

IV. Increasing banks charter values can also help to dampen the risk-taking propensities of the insured banks.

V. If universal banking is permitted it facilitates reusability of information and stimulates investments.

Further Bhattachyra (1998) suggests that restricting banks to financing themselves does not sacrifice efficiency; bank sizes should not be restricted and financing with non-traded demand deposit contracts without constraints on the associatedinterest rate patterns should be permitted.Therefore, it can be concluded that although restrictions have their place in thefinancial system, they are no tall beneficial o the public nor the banking systemand sometimes the economy as a whole.Measures such as interest rate ceilings and floors, exchange and credit controls andreserve requirement are typical tools for the central bank to use in their effort to thebanks. One school of thought is that where there is no deposit rate ceilings, banks willbid up deposit interest rates which in turn will cause them to seek out higher yieldingriskier assets to justify the high deposit rates.

2.1.6. Banking Regulation: The Risk of Bank Runs and Of Moral Hazard in Banking and Their Effects on the Economy

As cited in Bonn (2005). It is widely accepted that in the absence of market failures, open and competitive markets yield strong incentives to efficiently meet the demands of consumers and to adapt to changing demands and technology over time. With veryfew exceptions, in the absence of a market failure there is no economic justificationfor regulation.

The most important rationale for regulation in banking is to address concerns over thesafety and stability of financial institutions, the financial sector as a whole, or the payments system. The description and the evaluation that follows necessarily reflect the views of competition authorities. With only one exception, no bank regulator has reviewed this report, which therefore, does not necessarily reflect the positions and theopinions of bank regulators.

The risk of bank runs

All banks operate in conditions of fractional liquidity reserve. The great majority of banks liabilities are very liquid deposits redeemable on demand. The great majority of their assets are instead much more illiquid loans. This situation leads to the problem that if all depositors demanded their deposits back at the same time, any bank (even if perfectly solvent) would face serious problems in meeting its obligations vis à vis its depositorsBonn (2005).

A single bank might obtain refinancing on the financial market but the problem would severely persist in cases of low liquidity on the market or if the issue concerned a big portion of the banking sector.It is well known in the literature that whenever depositors start fearing the insolvencyof their bank, their first most common reaction is to go and withdraw their depositscreating serious problems to the banks. Such behavior is normally referred to as a bankrunBonn (2005).

The risk of excessive risk taking (moral hazard) in banking

Banks grant loans normally financed by the deposits they received. This is by itself a powerful incentive for banks to grant credit in a not sufficiently prudent way and to take in too much risk. In fact it is well known in the literature that with debt financing, while the risk of failure of the financed investment is mostly carried out by the bank depositors, in the case of success profits accrue mostly to the bank. A good example of this deviating behavior is the Asian financial crisis of 1997 that is mentioned further belowBonn (2005).

In general, however, this incentive is somehow mitigated by thepossibility that the market, both via depositors and via other banks, could monitor therisks assumed by the bank‟s management.

The main purpose of regulation is to avoid the highly negative consequences for the economy of widespread bank failures. There are two main strands of arguments for banking regulation. The first focuses on the systemic dangers of bank failures, while the second on the need for security and stability in the payments systemBonn (2005).

Systemic dangers of a bank failure

The main argument for bank regulation focuses on the possibility of systemic or system-wide consequences of a bank failure i.e. the possibility that the failure of one institution could lead to the failure of others. This argument is summarized byFeldstein as follows:

The banking system as a whole is a public good that benefits the nation over and above the profits that is earns for the banks shareholders. Systemic risks to the banking system are risks for the nation as a whole. Although the management and shareholders of individual institutions are, of course, eager to protect the solvency of their own institutions, they do not adequately take into account the adverse effects to the nation of systemic failure. Banks left to them will accept more risk than is optimal from a systemic point of view. That is the basic case for government regulation of banking activity and the establishment of capital requirements.It is possible to distinguish two mechanisms by which the failure of one bank couldlead to the failure of other banks or other non-bank firms:

(a) The failure of one bank leading to a decline in the value of the assets sufficient to induce the failure of another bank ("consequent failure") and(b) The failure of one bank leading to the failure of another fully solvent bank, through some contagion mechanism ("contagion failure")(Barth et al., 2006)..

2.1.7. Supervisory policies and profitability

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 (Barth et al., 2006).

To the extent that the insurance is credible, it reduces depositors‟ incentive to run banks when they fear banks‟ solvency. Consequently, it reduces banks‟ liquidity risk and, to the extent it is underpriced, gives banks the incentive to take additional risk for higher expected return (Barth et al., 2006).

2.1.8. Theoretical and policy debates

As cited Bonn (2005) this section discusses seven policy issues. For each issue, the researcher : (1) stress the conflicting theoretical predictions and policy debates, (2) emphasize that specific regulations and supervisory practices are so inextricablyinterrelated it is important to examine them simultaneously.

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 investorsto assist firms with outstanding loans. Second, to the extent that moral hazard encourages riskier behavior, 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 canimprove banking by restricting bank activitiesBonn (2005).

There are alternative theoretical reasons for allowing banks to engage in a broad rangeof 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 behavior. Lastly, broader activities may enable banks to diversify income streams and thereby create more stable banksBonn (2005).

Regulations on domestic and foreign bank entry

Economic theory provides conflicting views on the need for and the effect of regulations on entry into banking. Some argue that effective screening of bank entry can promote stability. Others stress that banks with monopolistic power possess greater franchise value, which enhances prudent risk-taking behavior Others, of course, disagree, stressing the beneficial effects of competition and the harmful effects of restricting entryShleifer et al. (1998).

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 creditorsShleifer et al. (1998).

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 favor depositinsurance plus powerful official oversight of banks to augment private-sectormonitoring of banks.Deposit insurance schemes come at a cost, however. They may encourage excessiverisk-taking behavior, 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 requirementsShleifer et al. (1998).

2.1.9. 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 behavior and thus improve bank development, performance and stabilityKane (1990).

Alternatively, powerful supervisors may exert a negative influence on bank profitability.Powerful supervisors may use their powers to benefit favored 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 perspectivethe agency problem betweentaxpayers and bank supervisors. In particular, rather than focusing on politicalinfluence, model the behavior of a self-interested banksupervisor when there is uncertainty about the supervisor‟s ability to monitor banks Kane (1990).

Under these conditions, they show that supervisors may undertake socially suboptimal actions. Thus, depending on the incentives facing bank supervisors and the ability of taxpayers to monitor supervision, greater supervisory power could hinder bank operationsKane (1990).

Regulations on private sector monitoring of banks

There are disagreements about the role of the private sector in monitoring banks. Some advocate more reliance on private sector monitoring, expressing misgivings with official supervision of banks. Recently, for instance, the Shleifer et al. (1998) view of government regulations specifically holds that banks will pressurepoliticians who, in turn, can unduly influence supervisory oversight.Furthermore, in some countries, supervisors are not well compensated and hence quickly move into banking, resulting in a situation in which they may face mixed incentives when it comes to strictly enforcing the rules.Since supervisors do not have their own wealth invested in banks, they also have different incentives than private creditors insofar as monitoring and disciplining banks. There are countervailing arguments, however. Countries with poorly developed capital markets, accounting standards, and legal systems may not be able to rely effectively on private monitoring.Furthermore, the complexity and opacity of banks may make private sector monitoringdifficult even in the most developed economies. From this perspective, therefore, excessively heavy reliance on private monitoring may lead to the exploitation of depositors and poor bank performanceShleifer et al. (1998).

Government ownership of banks

Economists hold different views about the impact of government ownership of banks. One view holds that governments help overcome capital-market failures, exploit externalities, and invest in strategically important projects. According to this view, governments have adequate information and incentives to promote socially desirable investments.Shleifer et al (1998), in contrast, argue that governments do not have

sufficientincentives to ensure socially desirable investments. Government ownership insteadpoliticizes resource allocation, softens budget constraints, and hinders economicefficiency.

2.2. Empirical Literature

The study has reviewed various empirical studies that are related with the effect of bank regulation on bank profitability by incorporating empirical studies conducted in developed countries and developing countries.

The effect of bank regulation on profitability of banks

Sami et al. (2011) studiedon the influence of bank regulation, concentration, and financial and institutional development on commercialbank margins and profitability across a broad selection of Middle Eastand North Africa (MENA) countries. The empirical results suggest thatbank-specific characteristics, in particular bank capitalization and creditrisk, have a positive and significant impact on banks' net interest margin,cost efficiency, and profitability. Also, they found that macroeconomic andfinancial development indicators have no significant impact on netinterest margins, except for inflation. Regulatory and institutionalvariables seem to have an impact on bank profitability.

Mahshidet al. (2011) studied whether regulation banking improves bank soundness. They find a significant and positive relationship between bank soundness and regulation banking. Specifically, countries which require banks to report regularly and accurately their financial data to regulators and market participants have sounder banks. The dependent variable is the bank‟s financial soundness as measured by its Z-score. These findings emphasize the

importance of transparency in making supervisory processes effective and strengthening market discipline. Countries aiming to upgrade banking regulation and supervision should consider giving priority to information provision over other elements of the Core Principles.

Michael et al. (2001) tested various hypotheses about the impact of regulation on bank industry structure and profitability. They measures of regulation include whether government policy permits banks to engage in securities, insurance, and real estate activities and to integrate banking and commercial activities. The remaining measures include whether governments license banks and provide deposit insurance. Controlling for both the size of the economy and the degree to which economic activity is restricted in general, their results indicate that restrictions on bank activities, deposit insurance, and lax entry requirements tend to reduce bank profitability and increase government ownership of the banking system.

Nafis (2012) investigated the linkages between bank regulatory and supervisory structures associated with Basel III‟s pillars and various aspects of banks‟ efficiency and risk. The analysis will be focused on dual banking system over the period 2006-2010. Their results suggest that regulations and strict monitoring of banking operation, and higher supervisory power of the authorities, increase the technical efficiency for Islamic banks but decreases convention banks efficiency. They observe the opposite effect in the case of restrictions on bank activities, with higher restrictions having a reduction in risk taking of Islamic banks while increasing the risk taking of conventional banks. Results also indicate that Islamic banks are better prepared towards the implementation of Basel III guidelines compared to their conventional counterparts.

Faten et al. (2014) studied on the effects of regulatory and supervisory policies on profitability and risk taking for European banks over the period 2005 to 2011. As these effects may vary according to the banks, the study applied the Generalized Method of Moments (GMM) for dynamic panels to capture further heterogeneous supervision effects before and after the subprime crisis. Accordingly, the study findings provide three interesting results. First, strengthening regulations and supervision improves profitability and boosts the stability of European banking systems. Second, our findings highlight a positive correlation between capital adequacy, deposit insurance systems and banks‟ profitability. Third, the research noted that stepping up supervisors‟ powers reduces risk-taking and promotes banking stability.

Katarzyna (2015) investigated the link between banking regulation and bank profitability in EU countries during the sample period 2005-2014. It covers 929 banks from 27 EU countries. The three main contributions of the study are: the analysis of banking regulations and their changes in 2003, 2008 and 2012, the investigation of their mutual relation with bank performance in 2005-2014, as well as the analysis of intertemporal effects and endogeneity between the post-crisis changes of regulations and bank profitability.

Shandre et al. (2011) examined onthe effects of bank regulation on the efficiency of banks in the Asian countries Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. The study covers nearly 600 banks from 1990 to 2008 and accounts for individual bank characteristics, bank regulatory measures, differences of bank ownership, and institutional differences.

The paper adopts different measures of bank efficiency such as returns on average assets (ROAA) and returns on average equity (ROAE) to study the impact of regulation on bank efficiency. The ROAA reflects the return on average assets and this is expected to increase with regulations such as higher capital requirements that enable firms to allocate their investments towards more productive. In contrast, ROAE is expected to fall with more regulation such as higher capital requirements that tend to create deadweight loss to capital and hence reduce the profit on equity. It is also likely that regulation of the off-balance-sheet activities of banks will have more impact on ROAE in terms of reducing the excessive risk-taking activities of banks. The results indicate that higher capital requirements in terms of a higher total equity to total assets ratio seem to improve bank performance (ROAA). The study also found private-sector monitoring of information tends to improve bank performance.

Eden (2014) studied on The Impact of National Bank Regulation on Banks Performance: Evidence from the Private Banks of Ethiopia". Start her study by the general objective of examine the impact of National Bank regulation on private banks performance in Ethiopia. The conclusion of her study is that NBE-Bill purchase has negative and significant effect on banks performance measured through both Return on Asset and Net Interest Margin.

The researcher concludes that investment in NBE Bills 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 negative and significant effect on the banks cost of intermediation measured through Net Interest Margin.

This is due to the reason that banks reserve which is hold by National Bank of Ethiopia do not generate any return since it doesn‟t bear any interest at all. Credit cap has negative and statistically significant effect on banks performance measured through both Return on Asset and Net Interest Margin. The researcher concludes that credit cap has a negative impact on banks profitability and this is due to since there was credit ceiling any bank cannot give the amount of loan above that ceiling so the 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 (Eden, 2014)

Yodit (2012) with the use of in depth interview made on exploratory research to investigate on the implication of NBE bill Purchase on performance of private commercial banks in Ethiopia and found out that the directive affects the bank‟s profitability in an adverse manner. The directive states that banks should purchase 27% based on their total disbursement with disregard to the nature of loan, which have revolving nature and are also short term, would aggravate the liquidity problem. But taking into consideration the deposit structure of the banks into account if the banks shift to loan term maturing loan in order to avoid the aggravated problem of liquidity with such revolving loans the banks would be faced with asset liability mismatch.

The directive as can be seen excludes the state owned bank which create an unfair ground for competition between the privateer and state owned banks specifically CBE. The directive preferential treatment hence, resulted in the shift of customers from the private banks to public banks as a result reduce the private banks market share in the industry while increasing the already strong market share of CBE (Yodit, 2012).

Study conducted by Nahom (2015) on the title of determinants of banks performance of private commercial banks in Ethiopia, analyzed on the determinants of banks performance by classifying his independent variables on bank specific factors and macroeconomic factor and significant determinant of performance among the banks specific and macroeconomic variables. His banks specific variables are capital adequacy, liquidity and asset quality and the external variables are real GDP growth rate, annual inflation rate, internal rate, NBE bill purchase. He used two dependent variables to measure banks performance they are return on equity and net interest margin. And he concludes that capital adequacy from banks specific factors and NBE bill purchase from macroeconomic factors was the major determinate of bank performance as measured by return on equity. And liquidity, real GDP growth rate, annual inflation rate and NBE bill purchase are the major determinants of banks performance as measured by net interest margin.

Another study conducted by Shibiru, (2014) on the assessment of the implication of regulatory policy on the development of private commercial banks in Ethiopia in case of NBE bill purchase directive. The objective of his study was to assess the implications of NBE bills purchase directive on the development of private commercial banks in Ethiopia.

The conclusions of his study was, implications of bills purchase directive of NBE negatively reflected on almost all private commercial banks‟ performances/activities consequently on the development of private commercial banks. The study also revealed the directive has negative implications on the expense of the private commercial banks via increasing the expenses of private commercial banks.

Likewise, the study revealed that the negative implication of bills purchase directive on the profitability, liquidity and capital and reserve of private commercial banks. The directive has no implication on the asset size of private commercial banks since the bills are one of the elements of asset of private commercial banks; however, it affected the potential growth of rate of assets and asset portfolio of banks. The assessment also disclosed, the couples of positive implications that directive had, enhancing branch expansion of private commercial banks and forcing them to develop new products, services and system to attract customers. He also conclude that the implications of the directive was rated as significant on asset, capital and reserve, branch expansion and very significant on liquidity, income, Loan able fund and overall development of private commercial banks (Shibru, 2014)

Tesfaye (2014) made research on the impact of policy measures on Ethiopian private banks performance on the case of government bill purchase. The major theme of the study is to assess the effect of sector specific policy measures on bank performance. The study has taken one of the top policy issues; the requirement to purchase government securities, and analyzed its impact on profitability measure, ROA. The study finds that exposure to government bills has negative and significant relationship with performance. Nevertheless, the magnitude is not severe.

Even the pre and post policy periods comparison revealed a relatively better profitability record for private banks during times of policy restrictions.

Hence, the bill seems contributed positively to performance via moping the excess liquidity holding of banks or providing an opportunity for private banks to invest their excess funds in government securities than the customary practice of holding their liquid asset in zero earning accounts at the National Bank of Ethiopia (Tesfaye, 2014).

2.2.1 Bank regulation

A. Legal reserve Requirement

High reserve requirements could result in financial repression which distorts the well-functioning of domestic financial markets (Tesfaye, 2014). According to Shimelis (2016) most of the less developed countries the use of reserve requirements against banks liabilities goes beyondtheir traditional role as a monetary instrument and a prudential measure. They have beenused to control the quantity of money and credit; affect the liquidity of the banking system.

Following the success in getting down the inflation in the country, the NBE revised the reserve requirement downwards to 10% effective from Jan 2012 (Directive No.SBB/46/2013). However, high reserve requirements decrease loan able funds available for investment by reducing the fraction of given volumes of deposits rate and by reducing the equilibrium volume of deposits through decreasing the profit-maximizing deposit Hence they are considered as a leakage in the intermediation process (James, 2002).

Reserve requirement policy in Central Bank of Montenegro primarily affects liquidity of the banking system and indirectly affects the stability and confidence in the banking system.

Also, using this instrument, the Central Bank of Montenegro influences the level of lending activity, i.e. indirectly it has effects on the money supply in the economy. Besides that, the reserve requirement policy change potentially impacts the maturity structure of deposits (Velibor, 2014).

B. Capital Requirement

Traditional approaches to bank regulation emphasize the positive features of capital adequacy requirements Dewatripont et al. (1994). Capital serves as a buffer against losses and hence failure. Furthermore, with limited liability, the tendency 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 Berger et al. (1995). With the objective of enhancing commercial banks capacity to absorb unexpected or unusual losses, the NBE promulgated a directive that sets the minimum paid up capital for new and existing commercial banks. Since September 2011, new commercial banks shall raise birr 500 million as a minimum startup capital, which was 75 million birr (Directive No.SBB/50/2011). Existing commercial banks are also required to raise their minimum paid up capital to Birr 500 million in less than five years" time, by 30 June 2016.

C. Equity Investment

The national bank of Ethiopia had a regulation state that, a bank"s aggregate equity investment inall non banking business including insurance companies shall not exceed 10% of its net worth(NBE directive No SBB/60/2015).

National bank of Ethiopia gave permission to commercial banks to invest their income on different non banking companies share with limited percentage. These companies can be insurance company or other share companies. The banks invest on this business in order to collect an additional income from interest payment. It is measured by the total amount of investment on insurance company share and other share companies stock. The study was seen onthe effect of amount invested on equity purchased and the bank‟s profitability.

D. Capital Adequacy

The NBE has set specific measure of the capital adequacy position of Banks, adequacy Ratio (CAR) (Directive No.SBB/9/95). The directive clearly set out the computation mechanism andthe conversion factors for both on and off-balance sheet items and strictly set for all banks not tomaintain their capital level below 8% of their risk weighted assets. Regardless of such regulatoryframework, the major intention of holding capital is to build the internal strength of the bank towithstand losses during crisis (Dang, 2011). However some authors argue that capital also affectsperformance via creating liquidity, hence banks with strong capital position are able to reducetheir financing costs, for example by paying low interest rates on their debt (Diamond, 2000).However, holding high capital level is not without drawbacks: a higher CAR ratio reduces theROA due to two mechanisms: A high ratio indicates a lower risk, and the theory of markets tobalance advocating a strong relationship at risk and profitability would lead us to infer a lowerprofitability.

E. Bank Size

Bank size as measured by total deposits or assets Smirlock, (1985) is one of thecontrol variables used in analyzing profitability of the bank system. This is included to controlfor the possibility that large banks are likely to have greater product and loan diversification.

Theimpact of bank size on profitability is uncertain a prior for the fact that on the one hand,increased diversification implies less risk and hence a lower required return, and on the otherhand, bank size takes into account differences brought about by size such as economies of scale.For large firms their size permits them to bargain more effectively, administer prices and in theend realize significant higher prices for the particular product Agu (1992).

2.3 Literature gap

As per the theoretical and empirical review of literatures there are different rules and regulations which are imposed on banks activity and of course the regulations which exist in one country is not similar with that of the others even though there are international regulations in which all of the banks in every country should obey, each and every country have their own regulations which is issued by the central bank for the purpose of controlling the economic activity of the countries. The variables which are used to see the impact of central bank regulation on banks performance are different from county to country. In Ethiopia there is no any empirical study which is conducted in this area by incorporating capital requirement, equity investment and legal reserve therefore this study is conducted to fill this knowledge gap by examining the effect of National bank regulation on private Commercial banks performance in Ethiopia.

CHAPTER THREE: RESEARCHMETHODOLOGY

3.1. Research Method

Explanatory research type was used in this research because the study identifies the cause andeffect of bank regulation on banks profitability. The methodology to conduct this study was based onthe general and specific objectives of the paper. The study was based on quantitative researchmethodology to construct an empirical model in order to measure the effect of bank regulation on profitability of private commercial banks in Ethiopian. Specifically, regression analysis was used tomeasure the effect of determinants on the dependent variable. The use of regressions considersthe simultaneous relationships among the multiple numbers of independent and dependentvariables found across the regression model, therefore it was found suitable for such a study.Regressions were further utilized to examine the associative relationships between variables interms of the relative importance of the independent variables and predicted values of thedependent variables.

3.2. Population of the Study

The study populations are all private commercial banks in Ethiopia. There are sixteen private commercialbanks in Ethiopia that are;Dashen Bank S.C, Awash International Bank S.C, Wegagen Bank S.C , United Bank S.C , Nib International Bank S.C ,Bank of Abyssinia S.C , Lion International Bank S.C , Cooperative Bank of OromiaS.C, Berehan International Bank S.C , Buna International Bank S.C , Oromia International Bank S.C , Zemen Bank S.C , Addis International Bank S.C , Abay Bank S.C (AB), Enat Bank S.C and Debub Global Bank S.C.

3.3. Method of Data Collection

In this research, secondary source of data was used to interpret the effect of bank regulation on the profitability of banks. Since the study used quantitative research approach, banks annual auditedfinancial reports were collected from sample banks and different directives were collected formNational bank of Ethiopia.

3.4. Sample and Sampling Techniques

The total populations of the private commercial banks in Ethiopia are sixteen but for the study purpose the researcher usedsample of seven private commercial banks in Ethiopia. These banks were selected due to their market share. As NBE (2014/15) annual report stated that these seven private commercial banks together accounted for 69% of the market share based on their number of branch and capital held by all Ethiopian private commercial banks.

The study covered a period of 11 years from 2005-2015 and included allprivate commercial banks with 11 and above establishment year. As NBE (2014/15) The sample of private commercial banks are Dashen Bank S.C (DB), Awash International Bank S.C (AIB),Wegagen Bank S.C (WB), United Bank S.C (UB), Nib International Bank S.C (NIB), Bank ofAbyssinia S.C (BOA) and Corporative bank of Oromia.

According to Suheyli (2015) as cited in Singh (2006) when the subjects used in the sample is homogeneous, using purposive sampling technique is appropriate. Hence, the researcher employed purposive sampling method to draw the sample from the population and meet the study objective. Therefore, the matrix for the frame willbe 11*7 that includes 77 observations.

3.5. Data Analysis

The nature of data used in this research enabled to use panel data model which was considered tohave advantages over cross sectional and time series data. Panel data involves the pooling ofobservations on the cross-sectional over several time periods. The issue that may arise from theuse of panel data is whether the individual effect is considered to be fixed or random. The choicebetween both approaches was done by running a Hausman test. Data collected from different sources was analyzed using Eviews 8 software package. The multiple linear regressions model was run using OLS through EViews 8 econometric software package, to test the effect of bank regulation on the profitability of private commercial banks. But before running theregression analysis, diagnostic tests was performed to ensure whether the assumptions of theClassical Linear Regression Model (CLRM) are not violated.

This assumption was test before analyzing the regression result. The first assumption is errors have zero mean. According to Brooks (2008), if a constant term is included in the regression equation, this assumption will never be violated.The second assumption is hetroskedasity. The assumption of homoscedasticity is that thevariance of the errors is constant or equal. If the variance of the errors is not constant, this would-be known as hetroskedasity (Guajarati, 2004).

In order to test homoscedasticity the white testwere used.The third assumption is the autocorrelation assumption that the covariance between the errorterms over time is zero; it assumed that the errors are uncorrelated with one another.

If the errorsare not uncorrelated with one another, it would be stated that they are serially correlated.Usually, Durbin-Watson (DW) value in the main regression table is considered

and used to testthe presence of autocorrelation.According to Brooks (2008) the fourth assumption is Normality of the error distribution assumedthe errors of prediction (differences between the obtained and predicted dependent variablescores) are normally distributed. Violation of this assumption can be detected by constructing ahistogram of residuals (Brooks, 2008).Finally the fifth assumption is multicollinearity assumption which refers to the situation in whichthe independent variables are highly correlated. When independent variables are multicollinear,there is overlap or sharing of predictive power. This may lead to the paradoxlyeffect, where asthe regression model fit the data well, but none of the explanatory variables (individually) has asignificant impact in predicting the dependent variable (Gujarati, 2004).

Model specification

To test the effect of bank regulation on banks profitability, the researcher estimates a linear regression model in the following form.

$$ROA = \alpha + \beta_1 LRR + \beta_2 CR + \beta_3 EI + \beta_4 CA + \beta_5 BZ + \varepsilon$$

Source: Developed by researcher

Where:-

ROA= return on asset

α, β1, β2, β3, β4, β5=represent estimated coefficient for specific bank

EI= equity investment

LRR= legal reserve requirement

CR= Capital requirement

CA= capital adequacy

BZ= bank size

3.6 Variables description and Hypothesis development

Dependent variable

Return on asset (ROA)

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). In addition, ROA is the major ratio that indicates the profitability of a bank. It is a ratio of net 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 ROA shows that the company is more efficient in using its resources.

Independent variables

Legal Reserve Requirement

It 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 assets (Eden, 2014). Furthermore, high reserve requirements decrease loan able funds available for investment by reducing the fraction of given volumes of deposits rate and by reducing the equilibrium volume of deposits through decreasing the profit-maximizing deposit. Hence they are considered as a leakage in the intermediation process (James, 2002).

H2 legal reserve requirement has negative and significant effect on profitability of Private commercial banks in Ethiopia.

Capital Requirement

The minimum paid up capital of national bank of Ethiopia and it measured by natural log. of total paid up capital amount. Capital serves as a buffer againstlosses and hence failure. Furthermore, with limited liability, the tendency for banks toengage in higher risk activities is curtailed with greater amounts of capital at risk. Capitaladequacy requirements, especially with deposit insurance, play a crucial role in aligning theincentives of bank owners with depositors and other creditors Berger et al. (1995).

H3 Capital requirement has positive and significant effect on profitability of Private commercial banks in Ethiopia.

Equity Investment

National bank of Ethiopia gave permission to commercial banks to invest their income on different non banking companies share with limited percentage. These companies can be insurance company or other share companies. The banks invest on this business in order to collect an additional income from interest payment. It is measured by the total amount of investment on insurance company share and other share companies stock. The study was seenonthe effect of amount invested on equity purchased and the bank‟s profitability (Eskedar, 2016). Moreover, effect of bank regulation on profitability of commercial banks was equity investment made by banks to other non banking businesses. Prior studies suggest thatequity investment has a positive and significant effect on bank performance Allen (2010),Franciso (2010) and Michael et al.(2012). This research also agrees with the prior studies thatequity investment has a positive and significant effect on banks profitability.

H4 Equity investment has positive and significant effect on profitability of Private commercial banks in Ethiopia.

Control Variables

Capital Adequacy

This measures capital strength of the banks. The ratio of Equity to total Asset is employed as ameasure for bank Capital Adequacy. This measures the percentage of the total asset that is financed with equity capital. Capital adequacy therefore describes the sufficiency of the amountof equity that can absorb shocks that banks may experience. It is expected that the higher the Equity to Asset ratio, the lower the need for external funding and therefore the higher theprofitability of the bank. Bank with higher capital to asset ratio are considered relatively saferand remained profitable even during economically difficult times. Conversely, banks with lowercapital adequacy are considered riskier relative to highly capitalized banks Kosmidou (2008).Considering the fact that capital adequacy may have an ambiguous effect on profitability;theoretical expectation of capital adequacy remains a puzzle to be answered by empiricalinvestigation.

Bank Size

In most studies of bank profitability determinants researchers used banks size as a control variable Michael et al. (2012), Eden (2014). Total asset is used a measure for bank size. Bank sizeis usually used to account for potential economies or diseconomies of scale in the banking sectorSamuel (2015.) Size might be an important determinant of bank profitability if there are increasing returns to scale in banking. However, size could have a negative impact when banksbecome extremely large due to bureaucratic and other reasons Eden (2014).

Table 3. 1Summarized Description of the Variables and Their Expected Relationship

Variables	Measurement	Notation	Expected sign
Dependent variable			
Return on asset	Net Income before tax to Total asset ratio	***ROA***	
Independent variable			
Equity investment	Natural log of total equity investment	***EI***	+
Capital requirement	Natural log of total paid up capital	***CR***	+
Legal reserve requirement	Reserve account in NBE/total asset	***LRR***	-
Control variable			
Capital adequacy	Equity to total Asset ratio	***CA***	
Bank size	Natural log Total asset	***BZ***	

Source: Compiled by the researcher

CHAPTER FOUR:DATA ANALYSIS AND PRESENTATION

This chapter of the research paper presents the data analysis and present the outcome of the results. To reach to the possible outcome in the effect of bank regulation on profitability of private commercial banks in Ethiopia, the research used the annual balanced panel data, where all thevariables are observed for each cross-section and each time period. The study has a time seriessegment spanning from the period 2005 up to 2015 and a cross section segment which considered seven private Ethiopian commercial Banks that are: AIB, DB, WB, BOA, UB, NIB andCBO. Accordingly, the result of descriptive statistics, correlation analysis, the test of CLRMassumption and result of the regression analysis are presented in the following sub-sections.

4.1. Descriptive Statistics of the Data

The descriptive statistics for the dependent and independent variables for seven private commercial banks of Ethiopia from year 2005 to 2015 with a total of 77 observations are presented below.

Table 4. 1 Descriptive Statistics

Variables	Mean	Std.Dev.	Maximum	Minimum	Observation
ROA	0.1243	0.0629	0.3518	-0.0167	77
CA	0.2497	0.2039	0.6260	0.0840	77
EI	5.61	2.95	7.92	0.00	77
LRR	0.0755	0.0165	0.0856	0.0655	77
CR	8.75	1.40	9.69	6.77	77
BZ	9.675	4.329	10.295	8.828	77

Source: - annual report of sample bank computed using EViews 8

As indicated in the above table, the profitability measured (ROA) shows that Ethiopian private commercial banks has achieved on average a positive profit over the last eleven years. For the total sample, the mean of ROA was 12.43% with a maximum of 35.18% and a minimum of -1.67%. That means most profitable banks among the sampled earned 35.18% profit from investment.

The mean value of the control variable CA was 24.97% and maximum and the minimum value of62.60% and 8.4% respectively. This result shows that most capitalized bank kept 62% of its totalasset for CA and the less capitalized kept 8.4%. The standard deviation of the CA was 20.39%.The mean value of capital adequacy ratio 24.97% provides the evidence that most of Ethiopiancommercial banks maintain higher level of capital requirement than given by National bank ofEthiopia.

The average value for equity investment as measured by natural log of total investment was 5.61with standard deviation of 0.02, maximum of 7.92 and the minimum of Zero. Form the samplecommercial banks maximum level of investment was 7.29% this implies the banks are notinvesting up to the permitted percentage that is 10% of their net worth and the minimum valuezero indicate most banks stare equity investment in recent years.

The average value for legal reserve requirement as measured by reserve amount divided by total asset was 7.55% with standard deviation of1.65%, maximum of 8.56% and minimum of 6.55%. This meansmost of the sample banks are reserving in national bank of Ethiopia account is average value is 7.55%.

The average value for capital requirement is 8.75 with standard deviation of 1.40 maximum of 9.69 and minimum of 6.77. For paid up capital requirement the mean value impliesbanks deposit their money on NBE account.

The average value for Bank size was 9.675 with standard deviation of 4.329, maximum of 10.295 and minimum of 8.828. This meansmost of the sample banks have average value 7.55 for size of the Ethiopian commercial banks.

4.2. Correlation Analysis

Correlation measures the degree of linear association between variables. Values of the correlation coefficient are always ranged between +1 and -1. A correlation coefficient of +1 indicates that the existence of a perfect positive association between the two variables, while acorrelation coefficient of -1 indicates perfect negative association. A correlation coefficient of zero, on the other hand, indicates the absence of relationship (association) between two variables (Brook, 2008).The table below shows the correlation matrix among dependent and independent variables.

Table 4. 2 Correlation Matrix

Variables	CA	EI	LRR	CR	BZ
ROA	-0.63772	-0.192823	-0.308868	0.522303	0.198856

Source: - annual report of sample bank computed using EViews 8

This study had calculated correlation of dependent variable with the independent and control variables. From the table capital requirement and bank size had apositive correlation with ROA. Capital adequacy, equity investment and legal reserve requirement hadnegative correlation with return on asset.

4.3. Testing Assumption of CLRM

Before going further in to panel data econometric measurement, the first issue is to test the assumption of classical linear regression model (CLRM).Five assumptions were made relating to the classical linear regression model (CLRM). Thesewere required to show that estimation technique, ordinary least squares (OLS), had a number ofdesirable properties, and also hypothesis tests regarding the coefficient estimates could validly beconducted Brooks (2008).

Test1:- The Error have Zero Mean *E* (*ut*) = 0

The first assumption required is that the average value of the errors is zero. In fact, if a constantterm is included in the regression equation, this assumption will never be violated Brooks (2008).Since this research included a constant term (α) in the regression model it passed the firstassumption.

Test2: Heteroskedasticity (*ut*) = $\sigma 2 < \infty$

It has been assumed that the variance of the errors is constant, σ2 this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic Brooks (2008). To test this assumption the white test was used having the nullhypothesis of heteroskedasticity. The result for this test shows:-

Table 4. 3 Heteroskedasticity Test:

Heteroskedasticity Test: White

F-statistic	1.476440	Prob. F(27,59)	0.1315
Obs*R-squared	35.08013	Prob. Chi-Square(27)	0.1617
Scaled explained SS	66.18220	Prob. Chi-Square(27)	0.1010

Source: - annual report of sample bank computed using EViews 8

As shown for the above table for the test of 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 heteroskedasticity, since the p-values were in excess of 0.05. So, for the second assumption it was proved that the variance of the error term is constant or homoskedastic and had no evidence ofheteroskedasticity and sufficient evidence to reject the null hypothesis of heteroskedasticity.

Test3: Covariance Between the Error Terms Over Time Zero cov(*ui , uj*) = 0 for *i* _=

This assumption stated that the covariance between the error terms over time (or cross sectionals,for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated withone another. If the errors are not uncorrelated with one another, it would be stated that they are„auto correlated" or that they are „serially correlated" Brooks (2008). Brooks (2008) noted thatthe test for the existence of autocorrelation is made using the Durbin-Watson (DW) test andBreusch-Godfrey test. The lagged value of a variable is used in this research in order to adjust the autocorrelation.Legged the value is simply the value that the variable took during a previous periodBrooks (2008). So from the regression result DW is 2.11 it is closed to two.Additional test for the existence of autocorrelation is thought Breusch-Godfrey test.

Table 4.4 Breusch-Godfrey Serial Correlation LM Test:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.897164	Prob. F(2,78)	0.4119
Obs*R-squared	1.956361	Prob. Chi-Square(2)	0.3760

Source: - annual report of sample bank computed using EViews 8

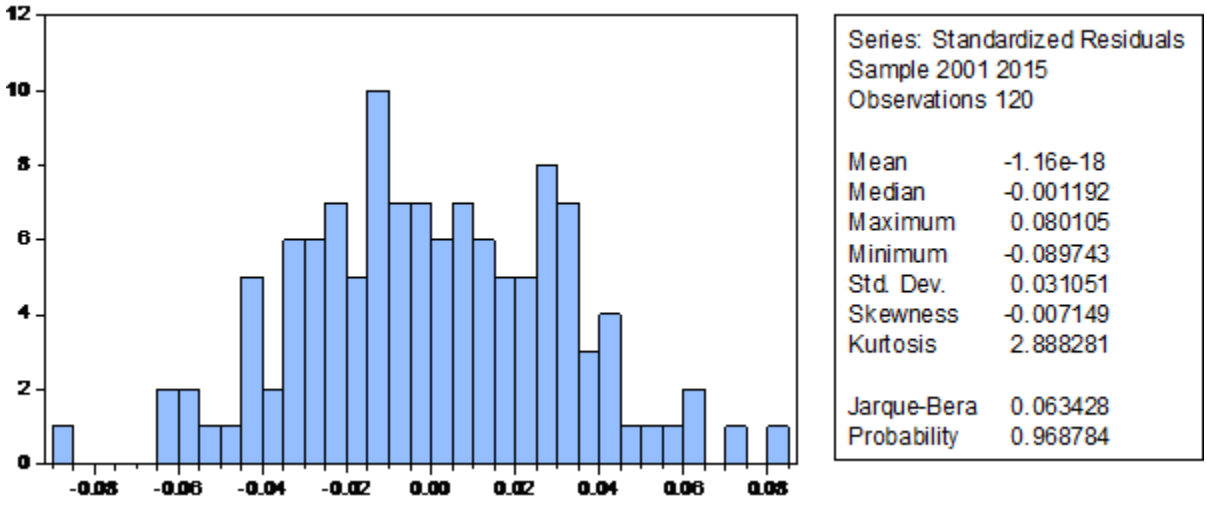
The above table show test of autocorrelation after inclusion of lagged variable and p value isgreater than 0.05and it indicates the absence of autocorrelation.The conclusion from both versions of the test in this case is that the null hypothesis ofautocorrelation is rejected and the errors are uncorrelated.

Test4: Normality (errors are normally distributed (ut~ N (0, +2))

A normal distribution is not skewed and is defined to have a coefficient of kurtosis ≈ 3. JarqueBera formalizes this by testing the residuals for normality and testing whether the coefficient ofskeweness and kurtosis are ≈ 0 and ≈ 3 respectively. Normality assumption of the regressionmodel can be tested with the Jarque- Bera measure.

If the JarqueBera value is greater than 0.05,it‟s an indicator for the presence of normality (Brook, 2008).In addition, it is quite often the case that one or two very extreme residuals cause a rejection ofthe normality assumption. Such observations would appear in the tails of the distribution, whichenters into the definition of kurtosis, to be very large. Such observations that do not fit in withthe pattern of the remainder of the data are known as outliers. If this is the case, one way toimprove the chances of error normality is to use dummy variables Brooks (2008). The tablebelow shows the result of normality by including dummy variables.

Figure 4. 1 Normality Test Result



Source: - annual report of sample bank computed using EViews 8

The diagram witnesses that normality assumption holds the coefficient of kurtosis was close to 3,skewness was zero and the Jarque-Bera statistic has a value of 0.968784 which is greater than0.05. These imply that the data were consistent with a normal distribution assumption. Based onthe statistical result, the study failed to reject the null hypothesis of normality.

Test5: Multicollinearity Test

This assumption is concerned with the relationship between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then wesay 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 betweentwo or more explanatory variables (Cameron & Trivedi, 2009; Wooldridge, 2006).Malhotra(2007) stated that Multicollinearity problem exists when the correlation coefficientamong variables is greater than 0.75. Kennedy (2008) also suggests that any correlationcoefficient above 0.7 could cause a serious Multicollinearity problem leading to inefficientestimation and less reliable results. This indicates that there is no a single agreed upon measure of Multicollinearity. In this research paper the researcher had 6 explanatory variables. The tablebelow shows the correlation result for all the independent and control variables in this research.

Table 4. 5 Test of Multicollinearity

	CA	BZ	LRR	CR	EI
CA	1				
BZ	-0.09814	1			
LRR	-0.55501	-0.05334	1		
CR	0.709743	0.508251	0.423026	1	
EI	-0.26419	0.387928	0.411001	0.522544	1

Source: - annual report of sample bank computed using EViews 8

The method used in this study to test the existence of multicollinearity was by checking the Pearson correlation between the independent variables.

The correlations between the independent variables are shown in table 4.6 above. All correlation results are below 0.75, which indicates that multicollinearity is not a problem for this study.

4.4. Random Effect (RE) Versus Fixed Effect (FE) Models

There are broadly two classes of panel estimator approaches that can be employed in financialresearch: fixed effects models (FEM) and random effects models (REM) (Brooks, 2008). Thechoice between both approaches is done by running a Hausman test. To conduct a Hausmantestthe number of cross section should be greater than the number of coefficients to be estimated.The following results are observed, with only the top panel that reports the Hausman test resultsbeing reported here in the following table.

Table 4. 6 Hausman Test

Correlated Random Effects - Hausman Test
Equation: HANSUMTEST
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.141870	6	0.0098

Source: - annual report of sample bank computed using EViews 8

According to (Brook, 2008) if the *p*-value for the test is less than 1%, indicating that the randomeffects model is not appropriate and that the fixed effects specification is to be preferred. Asshow in the above table the result of Hausman test the p- value is less than 1%, the nullhypothesis which is random effect model appropriate was rejected and the research used thefixed effect model.In addition to the Hausman test (Gujarati, 2004) state, if T (the number of time series data) islarge and N (the number of cross-sectional units) is small, there is likely to belittle difference inthe values of the parameters estimated by fixed effect model/FEM and random effectmodel/REM. Hence the choice here is based on computational convenience. On this score, FEMmay be preferable. Since the number of time series (i.e. 11 year) is greater than the number ofcross-sectional units (i.e. 7 private commercial banks), FEM is preferable in this case.

According toBrooks(2008); Verbeek (2004); Wooldridge(2006), it is often said that the REM is moreappropriate when the entities in the sample can be thought of as having been randomly selectedfrom the population, but a FEM is more plausible when the entities in the sample effectivelyconstitute the entire population/sample frame. Hence, this study chose to use FEM since thesample for this study was not selected randomly and closely approximates the sample frame.

4.5. Analysis and Interpretation of Regression Result

Empirical model: the empirical model used in the study in order to identify the effect of bank regulation on private commercial banks profitability in Ethiopia is:-

$ROA = \alpha + \beta_1 CA + \beta_2 EI + \beta_3 LRR + \beta_4 CR + \beta_5 BZ\varepsilon$

Table 4. 7 Regression result

Dependent Variable: ROA
Method: Panel Least Squares
Date: 12/18/16 Time: 05:16
Sample (adjusted): 2006 2015
Periods included: 10
Cross-sections included: 7
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.274075	0.043815	6.255257	0.0000
CA	-0.068422	0.013108	-2.932696	0.0261
EI	-0.111211	0.009785	-4.492776	0.4898
LRR	-2.730014	0.049188	1.227242	0.0000
CR	0.487331	0.061362	-2.165570	0.0250
BZ	0.012372	0.024216	-3.230663	0.0220
ROA(-1)	0.267479	0.074336	3.598267	0.0005
D315	0.290458	0.036770	7.899223	0.0000
D109	0.112245	0.035800	3.135312	0.0022

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.770935	Mean dependent var	0.079476
Adjusted R-squared	0.719818	S.D. dependent var	0.054553
S.E. of regression	0.033637	Akaike info criterion	-3.815821
Sum squared resid	0.116538	Schwarz criterion	-3.420926
Log likelihood	245.9493	Hannan-Quinn criter.	-3.655453
F-statistic	13.12550	Durbin-Watson stat	2.118713
Prob(F-statistic)	0.000000		

Source: - annual report of sample bank computed using EViews 8

Thus, based on the result in above Table, the following model was developed to examine the effect of bank regulation on banks profitability.

ROA=0.274075-0.068422CA-0.111211EI+0.487331CR-2.730014LRR+0.012372BZ +ε

On the above regression outputs the beta coefficient may be negative or positive; beta indicatesthat each variables level of influence on the dependent variable. P-value indicates at whatpercentage or precession level of each variable is significant. The R-squared value measures howwell the regression model explains the actual variations in the dependent variable (Brooks,2008). R-squared statistics and the adjusted-R squared statistics of the model was77% and 71%respectively. The adjusted *R* squared value 86% indicates the total variation of banks profitability was explained by the variables in the model.

Thus these variables collectively, aregood explanatory variables to identify the effect of bank regulation on private banks profitability. Theregression F-statistic (13.12) and the p-value of zero attached to the test statistic reveal that thenull hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies thatthe independent variables in the model were able to explain variations in the dependent variable.The coefficient of variables it start from the constant variable; it shows that the effect of bank regulation on profitability of private commercial bank of Ethiopia will have constant amount of -0.2740 on profitability other things being constant described by ROA.

The coefficient for CA is -0.068422 on ROA indicates that the capital adequacy of the banks hadnegative relationship with ROA and also the relationship is significant at 5% level of significant.The coefficient for LRR is 2.730014 on ROA indicate that the legal reserve requirement of the banks had negative relationship with ROA and the relationship is significant at 1% level of significant. Thecoefficient for PCR is 0.48733 on ROA indicate that the paid up capital of the banks had apositive relationship with ROA and significant at 5% level of significant.

The coefficient for EI is -0.111211 on ROAindicate that equity investment had a negative relationship with ROA but insignificant effect at5% level of significant. The coefficient for BZ is 0.012372on ROAindicate that bank size had a positive relationship with ROA and significant

effect at5% level of significant. The negative relationships indicate that there is an inverse relationship between the threeindependent variables and ROA. Thus the increase of those variables will lead to a decrease inROA. On the other hand the positive relationships indicate that there is a direct relationshipbetween the other two independent variables and ROA. The increase of this variables will led toan increase in ROA.

4.6. Discussion of Regression Result

The following section provides a brief analysis of the results for each independent and controlvariable and their importance in examining the effect of bank regulation on commercial Banks inEthiopia. Also the statistical findings of the study in relation to the previousempirical studies are discussed.

Legal reserve requirement

According to the regression result in legal reserve requirement had a negative relationship withprofitability with a coefficient estimate of -2.730014 and the p value of LRR is 0.0000 reveals thatit is statistically significant at 1% level of significance and also it was in line with the workablehypothesis. So the result supported the working hypothesis that legal reserve requirement has a negative and significant effect on profitability of Ethiopian private commercial banks.The implication of this result is that the increasing of legal reserve requirement leads to decreases profitability.

The result is no consistent with the previous studies of Eden (2014) that indicated legal reserve requirement had insignificant impact on profitability. However, regarding the study results legal reserve requirement has inversely relationship with profitability because, high reserve requirements decrease loan able funds available for investment by reducing the fraction of given volumes of deposits rate and by reducing the equilibrium volume of deposits through decreasing the profit-maximizing of the firm.

Equity investment

According to the regression table equity investment is negatively related with profitability with acoefficient estimate of -0.111211. This means holding other factors constant, a 100% increase inequity investment in reduces ROA by 11.12% and the p value of EI is 0.4898 reveals that it isstatistically insignificant at 5% level of significance. According to regression result not supported alternative hypothesis that there is significant relationship between equity investment and profitabilityof commercial banks was not supported.The national bank of Ethiopia had a regulation state that, banks aggregate equity investment inall non banking business including insurance companies shall not exceed 10% of its net worth(NBE directive No SBB/60/2015).

Prior study made in other country does not consist with this finding they conclude that equity investment had a positive and significant effect in banks profitability (Francisco). As indicated in the regression analysis equity investment had a negative and insignificant effecton return on asset. The result was total opposite with other prior studies it can be due to: The NBE regulation highly restricts banks in involving of investment in other companies stock. The banks allowed only to invest 10% of their net worth. Due to this regulation banks cannot exercise investment in other non banking businesses.

Even thought NBE allowed banks to invest10% of their net worth banks, it has other prior obligation that should fulfill. The first one is commercial banks have to open a reserve account in NBE and shall deposit money as per the regulation. The reserve account has no interest income and the NBE also penalize the banks if this reserve is in deficit. The second one is NBE bill purchase, as discussed in the previous point private banks have forced to purchase this bill. So banks firstly give priorities on this obligation. On the other side most of the commercial banks year of establishment is a maximum 20years except the government bank. Due to early age of establishment banks invest their money on prior investment that can increase their services quality and capital. Especially private commercial banks have to raise their capital as NBE requires, so that private banksare anxious to take higher risk on investing equity investment.

Capital requirement

From the regression result CR had a positive relationship with profitability with a coefficient estimate of 0.487331 and the p value of PCR is 0.0250 reveals that it is statistically significant at 5% level of significance. The result of the study supports working hypothesis that is there is positive and significant effect on profitability of private commercial banks. The result implies that capital serves as a buffer againstlosses and hence failure. Furthermore, with limited liability, the tendency for banks toengage in higher risk activities is curtailed with greater amounts of capital at risk.

Capitaladequacy requirements, especially with deposit insurance, play a crucial role in aligning theincentives of bank owners with depositors and other creditors. Thus, it helps to have a positive influence for increasing of banks profitability.

Capital Adequacy

According to the regression table capital adequacy had a negatively related with profitability with a coefficient estimate of -0.068422. This means holding other factors constant, a 100% increase in capital adequacy reduces ROA by 6.84% and the p value of CA is 0.0261 reveals thatit is statistically insignificant at 5% level of significance. The research used this variable as acontrol variable and predicts that capital adequacy had a positive and significant effect in profitability. But the result showed that CA had a negative and significance effect on banks profitability.

This result is consistence with other prior studies that capital adequacy has a negative and significant effect on profitability Mulualem (2015). This implies thatcommercial banks in Ethiopia uses there equity as sources of capital in order to meet theregulatory requirement level of capital.As the result implies capital adequacy has a significant effect on the banks profitability since it is an expensive source of fund it affects the profitability of banks. This is because capitaladequacy directly and automatically influences the amount of funds available for loans, whichinvariably affects the level and degree of risk absorption.

In addition, higher capital adequacy ratios may restrict the competitive ability of banks they alsoaffect banks growth capabilities. NBE set fixed amount to banks capital to continue their serviceand if the banks are not able to meet up with the mandatory capital ratio it may affect their

goingconcern and on their lending abilities which eventually affect their primary function of banks.

Bank size

According to the regression result in bank size had a positive relationship withprofitability with a coefficient estimate of 0.012372 and the p value of BZ is0.0220 reveals thatit is statistically significant at 5% level of significance and also it was in line with the alternativehypothesis. So the result supported the alternative hypothesis that BZ has a positive and significanteffect on profitability of Ethiopian commercial banks. This direct relationship between bank size and profitability in returnon asset, suggests that larger banks tend to earn higher profits. This is consistent withprior empirical evidence Noor M. and Ahmad H (2010), Suggesting that exploiting theeconomies of scale for large banks than smaller banks.

This implies that bank size induces economies ofscale there by making larger banks more profitable. Economies of scale will reduce the cost of gathering and processing information. The larger the bank size, the more profitable the bank. Itcould also mean that bank size is associated with diversification which may impact favorably onrisk and product portfolio. The data of this study shows the size of all Ethiopian commercialbanks which is measured by log of total asset is increased for the last 11 years. Consequently,this improvement leads to the profitability of banks in Ethiopia. The result implies that largerbanks enjoy the higher profit than smaller banks in Ethiopia banking sector because they areexploiting the benefit of economies of scale. The finding of this study was in consistent with thefindings of Akhaveinet al. (1997) and Smirlock (1985) and Damena (2011).

Table 4.8 Comparison of test result with expectation

Independent Variables	Expected Relationships with ROA	Actual result	Statistical Significance test	Hypothesis Status
Equity investment	+	-	Insignificant at 1%	Reject
Capital requirement	+	+	Significant at 5%	Failed to Reject
Legal reserve requirement	**-**	-	Significant at 1%	Failed to Reject
Control variable				
Capital adequacy		-	Significant at 5%	
Bank size		+	Significant at 5%	

Source: Compiled by the researcher

The preceding chapter presented the results and discussion, while this chapter deals with conclusions and recommendations based on the findings of the study. Accordingly this chapter isorganized into three subsections.

1.1. Summary of Findings

The research general objective was to examine the effect of bank regulation on the profitability of private commercial Banks in Ethiopia. The study used 11 years data from seven selected commercial Banks in Ethiopia. It carried out by constructing a balanced panel regression model based on OLS and fixed effects model of the secondary data obtained from the audited annual report ofsampled commercial Banks in Ethiopia.

The overall result obtained from the regression model indicates that bank regulation has an effect onprofitability of private commercial Banks in Ethiopia. The dependent variables used to measure banks profitability was return on asset and in order to achieve the objectives, the study used three independent variables were, equity investment, legal reserve requirement and capital requirement. Capital adequacy and bank size was also taken into consideration as a control variable.

From the regression result, capital requirement and bank size had a positive and significant effect on profitability of private commercial banks. Capital adequacy and reserve requirement had negative and significant effect on profitability. Equity investment had negative but insignificant effect on profitability of private commercial banks in Ethiopia.

1.2. Conclusion

- The result shows that legal reserve requirement had a negative and significant effect on the profitability of private commercial banks. This implies that when banks increase the amount of legal reserve it decreases their profitability.
- Capital requirement has a significant effect on the profitability of private commercial banks. This implies that Paid up capital has a direct relationship with profitability. As banks increasing the Paid up capital, they can earn higher profit and can also increase their market share.
- Capital adequacy has a negative and significant effect on the profitability of private commercial banks. Since equity is an expensive source of finance when banks highly concentrated on raising their capital, they would not be willing to involve in other investment area.
- Equity investment has negative but insignificant effect on the profitability of private commercial banks. This is due to the level of percentage that the government allowed banks to invest in other companies stock and the banks willingness in investing on other companies share.
- Bank size has a significant effect on the profitability of private commercial banks. This implies that bank size has a direct relationship with profitability. As banks increasing the size, they can earn higher profit.

1.3. Recommendations

Based on the major findings of the study, the researcher indicated the following recommendations.

- The analysis indicated that legal reserve requirement were significant related to profitability ofbanks. NBE should amend on this requirement in order to enhance private commercial banks.
- Capital adequacy had negative and significant effect on ROA. This implies that private commercial banks in Ethiopia used asset in order to meet the regulatory requirement level of capital. This has negative impact on ROA. So the researcher recommended to thebanks to find other cheaper source of finance other than equity to meet the requirement.
- Ethiopian private commercial banks should strongly enhance their total asset to have high return through providing different mechanism that increase their portfolio their services.
- Ethiopian private commercial banks increase their paid up capital for those banks who don‟t full fill minimum paid up capital requirement by selling additional stock for the existing as well as new shareholders.

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APPENDIXS

Appendix 1- List of Commercial Bank in Ethiopia

No	Name of Banks	Year of establishment
1	Commercial bank of Ethiopia S.C (CBE)	1963
2	Awash International Bank S.C (AIB)	1994
3	Dashen Bank S.C (DB)	1995
4	Bank of Abyssinia S.C (BoA)	1996
5	Wegagen Bank S.C (WB)	1997
6	United Bank S.C(UB)	1998
7	Nib International Bank S.C(NIB)	1999
8	Cooperative Banks of Oromia S.C(CBO)	2005
9	Lion International Bank S.C(LIB)	2006
10	Oromia International Bank S.C(OIB)	2008
11	Zemen Bank S.C(ZB)	2009
12	Bunna International Bank S.C(BIB)	2009
13	Berhan International Bank S.C (BBI)	2010
14	Abay Bank S.C. (AB)	2010
15	Addis international Bank SC. (AdIB)	2011
16	Debub Global Bank S.C. (DGB)	2012
17	Enat Bank S.C. (EB)	2013

Appendix 2- Descriptive Analysis

	ROA	CA	EI	LRR	CR	BZ
Mean	0.124356	0.249728	5.61 2248	0.075555	8.754598	9.675895
Median	0.1197 45	0.234528	6.69897 7	0.074394	8.812879	9.845668
Maximum	0.3518 24	0.626045	7.927561	0.856544	9.693727	10.29587 5
Minimum	- 0.016764	0 .084002	0	0.065558	6.777892	8.858785
Std. Dev.	0.062988	0.203955	2.95697 2	0.016512	1.401747	4.329786
Skewness	1.022047	5.248238	-1.150943	- 3.760414	-5.255953	3.342530
Kurtosis	6.14031	35.95392	2.532047	16.76803	32.35041	20.34634
Jarque-Bera	51.47953	4385.836	20.23142	902.4457	3563.804	1843.123
Probability	0	0	0.00004	0	0	0.000000
Sum	1093.634	2327.055	466.3907	632.7917	752.8966	17.22980
Sum Sq. Dev.	3451.801	36190.25	760.6994	237.2234	170.9459	0.654778
Observatios	77	77	77	77	77	77

Appendix 3-Correlation Analysis

	ROA	CA	BZ	LRR	CR	EI
ROA	1	-0.63772	0.198856	0.308868	0.522303	-0.192823
CA	-0.63772	1	-0.09814	-0.55501	0.709743	-0.26419
BZ	0.198856	-0.09814	1	-0.05334	0.508251	0.387928
LRR	0.308868	-0.55501	-0.05334	1	0.423026	0.411001
CR	0.522303	0.709743	0.508251	0.423026	1	0.522544
EI	-0.192823	-0.26419	0.387928	0.411001	0.522544	1

Appendix 4-Test of Heteroskedasticity

Heteroskedasticity Test: White

F-statistic	1.476440	Prob. F(27,59)	0.1315
Obs*R-squared	35.08013	Prob. Chi-Square(27)	0.1617
Scaled explained SS	66.18220	Prob. Chi-Square(27)	0.1010

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/24/16 Time: 15:40
Sample: 77
Included observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000239	0.000842	-0.283514	0.7773
CA^2	0.000307	0.000268	1.147368	0.2536
EI^2	0.000127	0.000128	0.992034	0.3232
LRR^2	0.004059	0.003761	1.079153	0.2828
CR^2	8.49E-05	0.000600	0.141543	0.8877
BZ^2	7.94E-05	5.77E-05	1.376609	0.1713
ROA(-1)^2	0.016569	0.009803	1.690271	0.0937
D60^2	-0.001758	0.001668	-1.053836	0.2941
D64^2	-0.000795	0.001623	-0.490012	0.6251

R-squared	0.087582	Mean dependent var	0.001165
Adjusted R-squared	0.008925	S.D. dependent var	0.001599
S.E. of regression	0.001592	Akaike info criterion	-9.964862
Sum squared resid	0.000294	Schwarz criterion	-9.718515
Log likelihood	643.7687	Hannan-Quinn criter.	-9.864774
F-statistic	1.113470	Durbin-Watson stat	1.698986
Prob(F-statistic)	0.358065		

Appendix 5 Test of autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.897164	Prob. F(2,78)	0.4119
Obs*R-squared	1.956361	Prob. Chi-Square(2)	0.3760

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/24/16 Time: 15:39
Sample: 2 77
Included observations: 76
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.025414	0.041628	0.610498	0.5427
CA	-0.002012	0.010266	-0.196020	0.8449
EI	-0.001831	0.009534	-0.192036	0.8481
LRR	-0.010542	0.049136	-0.214542	0.8305
CR	-0.004127	0.021013	-0.196417	0.8446
BZ	-0.002508	0.004876	-0.514284	0.6080
ROA(-1)	-0.105468	0.093907	-1.123105	0.2638
D60	0.001915	0.037009	0.051747	0.9588
D64	-0.008760	0.037773	-0.231901	0.8170
RESID(-1)	0.171759	0.134702	1.275103	0.2049
RESID(-2)	0.139621	0.102543	1.361586	0.1760

R-squared	0.024741	Mean dependent var	-6.77E-17
Adjusted R-squared	-0.077918	S.D. dependent var	0.034273
S.E. of regression	0.035583	Akaike info criterion	-3.737174
Sum squared resid	0.144339	Schwarz criterion	-3.446037
Log likelihood	250.3105	Hannan-Quinn criter.	-3.618888
F-statistic	0.241000	Durbin-Watson stat	1.986894
Prob(F-statistic)	0.995686		

Appendix 6 Hausman Test

Correlated Random Effects - Hausman Test
Equation: HANSUMTEST
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.141870	6	0.0098

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CA	-0.046746	-0.044178	0.000014	0.4879
EI	-0.003692	0.044797	0.000552	0.0390
LRR	-0.037480	-0.013160	0.000334	0.1831
CR	-0.105479	-0.035152	0.001522	0.0714
BZ	-0.138418	-0.131134	0.000173	0.5799

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 11/24/16 Time: 15:38
Sample: 2005 2015
Periods included: 11
Cross-sections included: 7
Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.380078	0.060488	6.283576	0.0000
CA	-0.046746	0.012273	-3.808740	0.0002
EI	-0.003692	0.064500	-0.057236	0.9545
LRR	-0.037480	0.031666	-1.183615	0.2390
CR	-0.105479	0.075801	-1.391521	0.1668
BZ	-0.138418	0.030461	-4.544030	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.410873	Mean dependent var	0.082242
Adjusted R-squared	0.337884	S.D. dependent var	0.054465
S.E. of regression	0.044318	Akaike info criterion	-3.285117
Sum squared resid	0.221942	Schwarz criterion	-2.950894
Log likelihood	225.2475	Hannan-Quinn criter.	-3.149321
F-statistic	5.629237	Durbin-Watson stat	1.529057
Prob(F-statistic)	0.000000		