COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

Effect of National Bank of Ethiopia's prudential Regulation on the Performance of Private Commercial Banks in Ethiopia

A thesis Submitted to the Department of Accounting and Finance, College of Business and Economics, Addis Ababa University, in Partial Fulfillment of the Requirements for Degree of Masters of Science in Accounting and finance

By

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Declaration

I, the undersigned, declare that this thesis is my original work produced under the guidance of my Advisor Dr. Alem Hagos, and has not been published and/or submitted for any award of degree in any other university and that all sources of materials used for the thesis have been dully acknowledged.

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Certification

This is to certify that the thesis prepared by Tekalegn kiflie, entitled: *The Effect of National Bank of Ethiopia's prudential Regulation on the financial Performance of private Commercial banks in Ethiopia:* and submitted in partial fulfillment of the requirements for the Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

The main objective of this study is to examine the effect of National bank of Ethiopia's prudential regulations on private commercial banks financial performance through the significant prudential regulatory variables explaining the NBE directives, using bank-specific and macroeconomic variables as control variables. Balanced fixed effect panel regression was used for the data of ten private commercial banks in the sample covered the period from 2009 to 2018. Four regulatory factors affecting private commercial banks financial performance in terms of return on equity were selected and analyzed. The results of panel data regression analysis showed that Capital Adequacy Ratio and Bank Size have negative and statistically significant effect on banks profitability, while lending interest rate and liquidity requirement ratio have positive and significant effect on profitability. The study disclosed that capital adequacy ratio is significant bank prudential regulation variable that affects the financial performance of private commercial banks. This implies that private commercial banks in Ethiopia used equity in order to meet the regulatory requirement level of capital. So the study recommended to the banks to find other cheaper source of finance other than equity to meet the requirement, private commercial banks should enhance their deposit mobilization endeavors in a better way than its normal practice, Ethiopian private commercial banks' officers and shareholders should effectively manage their total asset, and private commercial banks should concentrate on their profitability by charging lower interest rate and providing handsome return to depositors.

Key words: Bank, prudential regulation, financial performance

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List of Acronyms

ABB - Abay Bank

ADIB - Addis International Bank

AIB - Awash International Bank

BRB - Birhan International Bank

BOA - Bank of Abyssinia

BIB - Buna International Bank

CBO - Cooperative Bank of Oromiya

 CC - Credit Cap

CLRM - Classical Linear Regression Model

DB - Dashen Bank

DGB - Debub Global Bank

DW - Durbin-Watson

EB - Enat Bank

FEM - Fixed Effect Model

GDP - Gross domestic Product

IMF - International Monetary Fund

INFL - General Inflation Rate

LIB - Lion International Bank

MENA - .Middle East and North Africa

NBE - National Bank of Ethiopia

NIB - Nib International Bank

NIM - .Net Interest Margin

OIB - Oromiya International Bank

OLS - Ordinary Least Square

REM - Random Effect Model

ROA - Return on Assets

LRR - Legal Reserve Requirement

UB - United Bank

WB - Wegagen Bank

ZB - Zemen Bank

Chapter One

Introduction

1.1.   Background of the Study

According to Rosa Maria Lastra (1996) historically Banking regulation is the reaction to banking crises, since bank failure can cause externalities, additional loses on the economic system which justify support for the system in the form of lender of last resort functions by a central bank; therefore the rationale of banking regulations is related to the business of banking itself rather than to the character of the bankers.

Traditionally, the core function of any commercial bank is the extension of loans and the larger proportion of banks' assets is formed by loans (Fungacova et. al., 2014). In a modern economy, the role of the financial system is to lubricate the gears facilitating economic operations. The gains of the real sector largely depend on how the financial institutions perform the financial intermediation functions. The banking system plays the role of transferring funds from the saving units to the investing units, thereby generating reasonable income in the process (Saona, 2011).

Commercial banks exist because of the various services they provide to sectors of the economy, e.g., information services, liquidity services, transaction cost services, maturity intermediation services, money supply transmission, credit allocation services, and payment services. In their conventional role as financial intermediaries, banks ensure the transmission of funds from surplus to deficit units and serve to meet the demand of those who need funding. Banks facilitate spending and investment, which fuel growth in the economy. This function is well executed only when banks operate in a more efficient manner. However, despite their important role in the economy, banks are nevertheless susceptible to failure. Banks, like any other business can go bankrupt. However, unlike most other businesses, the failure of banks, especially very large ones, can have far-reaching implications. Failure to provide these services or a breakdown in their efficient provision can be costly to both the ultimate sources (households) and users (firms) of savings, as well as to the overall economy. Consequently, it is imperative that banks operate in a safe and sound manner to avoid failure. Due to the obvious importance of the financial system, its safety and soundness has remained a major concern of governments.

According to Llewellyn (1999), bank rules and guidelines help protect customers from exploitative prices and safeguard the banking industry against systemic risk. Accordingly, banks are highly regulated in most countries.

Commercial banks are subjected to thorough supervision and regulation by an independent authority because the level of risks they incur is too high compared to other institutions, and they are the engine of financial stability and economic prosperity of any country (Llewellyn 1999). According to Mitchell (1984), the more specific objectives of regulation have been to protect depositors, to promote a stable money supply by preventing financial panics, and foster an efficient and competitive banking system that facilitates financial intermediation. To achieve these objectives, government limits the activities and practices of banks and control the environment in which they operate. Yet, with the advent of globalization, banking activities are no longer confined to the borders of any individual country. With cross-border banking activities rapidly increasing, the need for international cooperation in bank regulation has likewise increased (Larson, 2011).

Barth, Caprio and Levine (2001) argue that all governments tend to regulate and control them to ensure the stability of their economies. The purpose of these prudential regulations is to serve the public interest, in particular the interest of consumers of banking services since these prudential regulations are put in place by the public authority which does not have contractual relations with the director of the bank or the bank organization, for this, agents always have confidence in this sector. This regulation results in the implementation of prudential rules, aimed at better control and control of banking risks and better coverage of equity. Prudential control is therefore a necessity for all banking sectors worldwide. National Bank of Ethiopia put different regulation and supervision on the banking activities at different times. These regulations and supervisions are intended to stabilize the country's economic environment (Eden, 2014).

The ultimate question that calls to mind at this juncture is "How do Bank Regulations affect the financial performance of private commercial banks in Ethiopia? This study is therefore designed to analyze the effect of bank regulation variables on commercial banks financial performance, return on equity as a measure of financial performance in Ethiopia between 2009 and 2018.

1.2. Commercial Banks Regulation in Ethiopia

The National Bank of Ethiopia was established in 1963 by proclamation 206 of 1963 and began operation in January 1964. Prior to this proclamation, the Bank used to carry out dual activities, i.e. commercial banking and central banking. The proclamation raised the Bank's capital to Ethiopian dollars 10.0 million and granted broad administrative autonomy and juridical personality. However, monetary and banking proclamation No. 99 of 1976 came into force on September 1976 to shape the Bank's role adoring to the socialist economic principle that the country adopted. Hence the Bank was allowed to participate actively in national planning, specifically financial planning, in cooperation with the concerned state organs. The Bank's supervisory area was also increased to include other financial institutions such as insurance institutions, credit cooperatives and investment-oriented banks. Moreover, the proclamation introduced the new Ethiopian currency called 'birr' in place of the former Ethiopia Dollar that eased to be legal tender thereafter.

In Ethiopia, National Bank exercises control over the banking sector through issuance of directives pertaining formation and operation of a banking business. Some of the reasons include protecting depositors' fund, ensuring safety and stability of the banking system, protecting safety of banks by limiting credit to a single borrower and limiting or encouraging a particular kind of lending because of expected effect on the economy (Semu, Z., 2010). In addition, policy measures from the government interfere in the decision making process of private commercial banks which might have implication on efficiency and financial performance.

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. Regarding directive No. SBB/3/95 the contribution in kind of the initial capital requirement and stated capital contribution in kind is not allowed for fulfilling minimum required capital and even if the bank fulfills its requirement the capital contributed in kind must not exceed 25% of paid up capital.

In addition, the NBE issued various requirements on directive No. SBB/4/95 that after banks fulfills the initial minimum capital they are subject to the following obligations in order has sound reserves account in their NBE. This obligation is to transfer from its total annual profit 25% to its reserve account until the reserve equals its capital (if their reserve reaches the capital of the bank only 10% of profit is required to be transferred to their reserve account).

With the objective of controlling the recurring inflationary episodes in the country, national bank of Ethiopia increases the reserve requirement on commercial banks from 5% (Directive No. SBB/37/2004) to 10% effective from July 2007 (Directive No. SBB/42/2007) and further to 15% effective from April 2008 (Directive No. SBB/45/2008). Hence, the share of private banks in loan disbursement is decreased since 2009. From the total disburse loan in 2011/12 Public banks cover 66%. The CBE is the dominant bank in the country as it covered 57% of the total loan disbursed in 2011/12. Private Banks all together granted USD 1.1 billion or 34% of the total fresh loans disbursed during the same fiscal year (Getnet 2014). 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/46/2012) and further to 5% effective March 2013 (Directive No. SBB/55/2013).

The liquidity requirement has also increased following the revision of reserve requirement (it is always 10% plus to the reserve requirement). This means the liquidity requirement requires banks to hold a further 25% (this is from their total reserve which includes TBs, Legal including foreign exchange, etc.) in liquid reserves (only Legal deposit). Following the success in getting down the inflation in the country, the NBE revised the reserve requirement downwards to 10% effective January 2012 (Directive No. SBB/46/2012) and the reserve requirement down to 5% effective March 2013.however, the liquidity requirement remained at 20% until directive No. SBB/57/2014 is issued. According to (5th Replacement) Directives No. SBB/57/2014. any licensed bank shall maintain liquid assets of not less than 15% of its total demand, saving and time deposits and similar liabilities with less than one-month maturity period. At least 5% of the required liquid assets shall be in the form of primary reserves (notes and coins, and balances held with the NBE); and 10% of it in the form of secondary reserve assets (defined in Article 16(2)(b) of proclamation No.84/1994).

On April 4, 2011 (NBE Directive No. MFA/NBE Bills/001/2011), the NBE issued a directive requiring all private commercial banks to invest 27% of their every new loan disbursement in NBE bills with maturity of five years at a very low interest rate, 3%, far below from what banks pay as an interest for the deposit. The government took this action as a way of mobilizing resources for government targeted private sector activities and these funds are administered by the DBE. Following the five-year development plan - GTP (2010/11-2014/15) which aims to at least lay the ground for the structural transformation of the economy from agriculture to industry, the government has fully recognized the pivotal role of the private sector in the transformation process and committed to finance the private sector in selected strategic sectors that facilitates such transformation. These strategic sectors (manufacturing and agro processing) require long-term and large loans. However, private banks are not interested in providing long-term loans and have also limited capacity in providing large loans (single borrower limit). It is this factor that led the GoE to issue this bill to mobilize resources and facilitate access to long-term and large loans. These resources are being intermediated by the DBE, a bank established to financing long-term projects. Consequently, private banks are shifting to long-term loans so as to reduce the amount of NBE bills as the turnover of short-term loans is high. Private Banks are also engaged in rescheduling loans, which is not considered as new loan and hence managed to avoid additional NBE bills. They are also engaged in fee-based projects where they only give loan guarantee for projects and simply get money for this service without even being engaged in administration. NBE was aware of private banks' reaction such as shifting to long-term loans, and came up with a new regulation that forces all private banks' short-term loans to constitute at least 40% of total loans in 2013 (Directive No. MFA/NBE Bills/002/2013)

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 and the conversion factors for both on and off-balance sheet items and strictly set for all banks not to maintain their capital level below 8% of their risk weighted assets. Regardless of such regulatory framework, the major intention of holding capital is to build the internal strength of the bank to withstand losses during crisis (Dang, 2011). However, some authors argue that capital also affects financial performance via creating liquidity, hence banks with strong capital position are able to reduce their financing costs, for example by paying low interest rates on their debt (Diamond, 2000).However, the higher

the capital adequacy ratio, it is more difficult for banks to achieve higher profit; if the profit rate is low, banks also have difficulty in raising further capital; on the other hand, if banks are protected by "safety net or deposit insurance" they tend to hold lower capital and/or take excessive risk and banks particularly "troubled" bank might gamble with, rather than efficiently manage their Assets that is why regulators safeguarding the safety and soundness banking system are very much concerned with capital adequacy ratio (Rosa Maria Lastra 1996).

1.3. Statement of the Problem

Financial Stability is the critical aspect of National Bank Ethiopia's (NBE's) Mission.

Banking system is the major channel for the transmit ion and realization of monetary policy, which is essential for stable financial system and sustainable economic growth (Magdalena Redo 2015).

Banking system makes profit by lending depositors' money to investors; for any business, profits are the important element but for banking business, safety and being solvent are foremost. to protect depositors; prudential bank regulation came into picture; which enhances risk management practices, make banking sector robust and shock absorbent (Dr. Manisha and Mrs. Kaveri Hans 2015).

The systemic banking crisis occurs when many banks in a country are in serious solvency or liquidity problems at the same time, either because there are all hit by the same outside shock or because failure in one bank or a group of banks spreads to other banks in the system even to other corporate and financial sectors. In some cases, the crisis nay be triggered by depositor runs on banks, though in most cases it is a general realization that systemically important financial institutions are in distress. This has effects on the economy at the local and global level (Imad feneir 2016).

In the Ethiopian banking business, National Bank of Ethiopia (NBE) issues circulars, directives and guidelines which are assumed to maintain stable price, stable interest & exchange rate, foster a healthy financial system. NBE has repealed the NBE-Bill Purchase Directive which used to mandate private commercial banks to buy NBE Bill 27 percent of every loan disbursement. The Bank has issued a new directive; "NBE–Bill Purchase (Repealing) Directive No. MFA/NBEBILLS/004/2019" and stated in article 2 of this

directive that the former Directive No. MFA/NBEBILLS/003/2018 is hereby repealed. The repealed directive shall have effect with respect to any outstanding NBE Bill which has been issued before the coming into effect of this directive. The new directive has come into force as of the 20th November 2019.

From time to time, the commercial banks, especially the private commercial banks, are arguing that their capacity and strength is declining due to NBE's prudential regulations while NBE claims that it is lack of good governance on the part of the private commercial banks. This shows that, with respect to the effect of regulatory Variables on the performance of private commercial banks, there are two views 1. From NBE side it is protecting banking system's safety and soundness 2. From private commercial banks side NBE's prudential regulations are challenging and discriminatory between private and state owned banks (Anteneh 2014)

A number of studies exist in banking regulation and financial performance of commercial banks. Capital requirements lead to reduced credit risk especially for commercial banks with a larger market share (Agoraki, Delis & Pasiouras, 2011). According to Naceur & Kandil (2009), when banks do not have sufficient capital, it increases their intermediation cost. This emphasizes the need to regulate capital. Tsuma & Gichinga (2016) found out that Change in capital requirement affects financial performance of commercial banks because fund that were to be lend out to earn interest income are put up as capital thus denying commercial banks revenue. Kirimi (2015) found out that lending rates positively influence financial performance of commercial banks because it is the main determinant of interest income. Ben and Omran (2011) found that the bank-specific variables particularly bank capitalization and credit risk exhibit a positive and significant effect on net interest margin, cost efficiency and profitability of banks, but no significant influence from macroeconomic and financial development variables. In addition, they identified that regulatory and institutional variables have an influence on bank financial performance. Ejoh and Iwara (2014) assessed the effect of capital adequacy on deposit money banks' profitability in Nigeria. The study shows that capital adequacy plays an important role in explaining bank returns on assets (ROA) which is a measure of bank profitability. Similarly, Pasiouras et al. (2009) in their study on the effect of bank capital regulation on bank stability found that an increase in the bank minimum capital requirement decreased bank financial stability

In Ethiopia, several research studies have been done in relation to commercial banks: Eden (2014) studied the Effect of National Bank Regulation on the Banks Financial performance, her study included bank regulation variables such as credit cap, reserve requirement and NBE bill The results of panel data regression analysis showed that NBE Bill and Credit cap had negative and statistically significant impact on banks profitability but reserve requirement had negative and insignificant impact on profitability.

Addisu, (2017) studied the effect of bank regulation on commercial bank's profitability by incorporating equity investment, reserve requirement and capital requirement as variables and found out that minimum capital requirement and capital adequacy ratio have a significant effect on the profitability of commercial banks;

Mekonen and Melesse, (2014) studied on Financial Regulation and Supervision in Ethiopia and conclude that Ethiopian financial system remains highly controlled with an intervention rate around 425%. In order to meet its gradualism approach to liberalization the government of Ethiopia through its National Bank issued various proclamations, procedures, directives, manuals and guidelines on how to regulate and supervise the financial system.

Simeneh (2018) studied the effect of prudential bank regulation on commercial bank's performance and conclude that in the absence of financial market prudential regulations affects the banks' performance negatively depending on the risk level and size of the banks regulated.

This study will be different by looking for the combined effects of the four prudential regulatory variables namely capital requirement, capital adequacy requirement, reserve requirement, liquidity requirement including the bank specific variables lending interest rate, & bank size, and Macroeconomic variables and inflation & GDP on the financial performances of private commercial banks in Ethiopia.

1.4. Objectives of the study
1.4.1. General Objective

This study is designed to answer the question with regard to the effect of banking prudential regulations on the financial performance of private commercial banks in Ethiopia.

1.4.2. Specific Objectives

The specific objectives of the study are:

1. To examine the effect of capital adequacy ratio on the financial performance of private commercial banks in Ethiopia.

2. To determine the effect of liquidity requirement ratio on the financial performance of private commercial banks in Ethiopia.

3. To find out the effect of legal reserve requirement on the financial performance of private commercial banks in Ethiopia.

4. To determine the effect of capital requirement on the financial performance of private commercial banks in Ethiopia.

1.5. Research Hypothesis

The following hypotheses are developed based on the research objectives and previous empirical studies. Therefore, this study will attempt to test the following five null hypotheses in the case of private commercial banks in Ethiopia.

H1: Capital adequacy regulation has significant and positive effect on the financial performance of private commercial banks in Ethiopia.

The major intention of holding capital is to build the internal strength of the bank to withstand losses during crisis (Dang, 2011). However, some authors argue that capital also affects financial performance via creating liquidity, hence banks with strong capital position are able to reduce their 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 the ROA due to two mechanisms: A high ratio indicates a lower risk, and the theory of markets to balance advocating a strong relationship at risk and profitability would lead us to infer a lower profitability. Several studies (Karki, 2004; Maharjan, 2007; Sangmi& Nazir, 2010; Ejoh &Iwara, 2014; and Al kadamani, 2015) have indicated a positive relationship between capital adequacy and banks profitability. The researcher expects that it will have a positive effect on banks financial performance.

H2: Liquidity requirement regulation has positive and significant effect on the financial performance of private commercial banks in Ethiopia.

Liquidity management can have different effect on financial performance according to different researchers. The findings of the study conducted so far (Lamberg & Valming, 2009; Wambu, 2013; Joshi, 2004; and Kurawa & Abubakar, 2014) show that Liquidity has statistically significant and positive relationship with banks' profitability. The researcher expects that it will have a positive effect on banks financial performance.

H3: Legal reserve requirement has a negative and significant effect on financial performance.

The lower the LRR, the more deposits volume that can be exploited by the Bank in lending, which increases the size of the credit facilities granted by banks. Several studies (Olokoyo, 2011; Younus and Akhta, 2009; and Fatima &Samreen, 2015) have indicated that the LRR is considered an influential factor on the bank financial performance. The researcher expects that it will have a negative effect on financial performance.

H4: Capital requirement regulation has negative and significant effect on the financial performance of private commercial banks in Ethiopia.

Minimum capital requirement is the minimum amount of liquid capital that banks should raise to entry the regulated market (Staschen, 2003). 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. This requirement is an absolute measure of solvency and is usually established by primary regulation (Staschen, 2003). Several studies (Pasiouras et. al., 2006; Beckmann, 2016; Kopecky& Van Hoose, 2006; and Barth et. al., 2004) indicated a negative relationship between capital requirements and banks' soundness. The researcher expects that it will have a negative effect on banks financial performance.

1.6.   Significance of the Study

Findings of this study contributes more knowledge expansion concerning banks prudential regulations and financial performance of private commercial banks in Ethiopia, after

investigating the following four prudential regulations, liquidity requirement rate, capital adequacy ratio, legal reserve requirement, and capital requirement. The following among others will benefit more from the study:

Private Commercial Bank's management team will get information on the purpose & expected outcome of prudential regulation and supervision, hence exchange feedback positively with NBE on the Impacts of the regulations on their performance and contribute for the improvement of the regulations. Management of other financial institutions also will find this research important hence use it as benchmark in financial performance improvement.

NBE's management team will get new information on the impacts of the regulatory variables with respect to the performances of private commercial banks, take adequate feedback and invite for participation in the efforts of achieving safe, efficient, and sound banking system.

Academicians & researchers will get information that motivates them for more action towards the refinement or checking the accuracy of the findings, conclusion & recommendations in order to ensure the achievement of sound financial system and sustainable economic growth.

1.7. Scope of the Study

This study is concentrated on four regulatory variables; liquidity requirement rate, capital adequacy ratio, legal reserve requirement, and capital requirement in order to investigate whether they result to strong or weak relationship with financial performance of private commercial banks in Ethiopia. The study had taken in to account the profitability of banks for the last 10 years that is from 2009 to 2018. As a result, this research included Ethiopian private commercial banks that are started their operation on and before 2009, which are 10 private commercial banks who operate in Ethiopia. The study is conducted only on ten (10) private commercial banks. Since the study covered a period of 10 years (2009 -2018), there are banks with the age of less than ten years. The study included all private banks, with 10 and above establishment year: 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), and Cooperative Bank of Oromia S.C (CBO), Lion

International Bank S.C (LIB), Oromia International Bank S.C (OIB), Zemen Bank S. (ZB) and Bank of Abyssinia S.C (BOA).

1.8. Limitation of the Study

The study is limited to examine the effect of the regulatory variables on banks profitability, which is applied by the National Bank of Ethiopia, observed for ten consecutive years (2009-2018). Assessment of only four directives may not give the whole picture; but it will indicate facts and figures in the regulatory practice, in terms of their role on the development of the Private Commercial Banks in Ethiopia. There was also time and financial constraint; because of this, the study could not fully work on all prudential regulation variables that could have implications for the financial performance of the Private Commercial Banks in Ethiopia.

Chapter Two

Literature Review

This chapter outlines the theoretical review of the study and opinions advanced by various authors, writers, and scholars on the concept of banking regulation and financial performance of commercial banks. It also outlines the various studies done by different scholars in the same knowledge area.

2.1. Conceptual Literature Review

According to Deribsa (2017), in developing literature review researchers have to focus on:-

1. The facts already known about the subject
2. The trend in which the development of knowledge about the subject is going
3. The Gaps in the knowledge and understanding about the subject or problem
4. The debates and consensuses in the area and the significance of each
5. What the study can add to the body of knowledge available in the area to fill the gap

2.1.1. Theory of Bank Regulation

In trying to explain the relationship between bank prudential regulation and private commercial banks financial performance, several theories have been advanced. Banking regulations have attracted both theoretical and empirical interest, and several studies attempt to assess whether and how the regulatory framework influences the performance and behavior of banks. The following section will describe and discuss different theories.

2.1.1.1. The Helping-Hand Theory

In economic theory there are two perspectives on the role of the government in the market place: the public interest world based on the premise that markets can fail so that intervention by a benevolent government is justified ("helping hand" view); and the private interest theory, portrayed by the "grabbing hand" by Shleifer and Vishny (1998), recognizing that both despotic and democratic governments are likely to pursue goals that are different from "social welfare". Instead, economic policy is designed in such a way that it benefits those who currently have political power. Pigou's (1938) classic treatment of regulation holds that monopoly power, externalities, and informational asymmetries

create a constructive role for the strong helping hand of government to help offset market failures and thus enhance social welfare. The helping-hand view takes as given both that there are market failures and that the government can ameliorate these failures. Applied to banking, this view of government considers official supervision of banks, limits on bank activities, restrictions on bank entry, and a deposit insurance scheme as (potentially) appropriate policies that alleviate market failures and improve resource allocation.

There are five main theoretical reasons for restricting the degree to which banks can engage insecurities, insurance, and real estate activities, or own nonfinancial firms. Indeed, it is these types of prudential regulations that help define what observers mean by the term "bank." First, conflicts of interest may arise when banks engage in such diverse activities as securities underwriting, insurance under writing, and real estate investment. Banks, for example, may attempt to "dump" securities on or shift risk to ill-informed investors so as to assist firms with outstanding loans Second, to the extent that moral hazard encourages riskier behavior by banks, they will have more opportunities to increase risk if allowed to engage in a broader range of activities. Third, broad financial activities and the mixing of banking and commerce may lead to the formation of extremely large and complex entities that are extraordinarily difficult to monitor. Fourth, large institutions may become so politically and economically powerful that they become "too big to discipline." Finally, large financial conglomerates may reduce competition and hence efficiency in the financial sector. According to these arguments, a helping hand from the government can ease market failures and thereby enhance bank financial performance and stability by restricting activities (Bonn, 2005).

There are alternative theoretical reasons for allowing banks to engage in a broad range of activities, however. First, fewer regulatory restrictions permit the exploitation of economies of scale and scope. Second, fewer regulatory restrictions may increase the franchise value of banks and thereby augment incentives for more prudent behavior. Lastly, broader activities may enable banks to diversify income streams and thereby create more stable banks (Bonn, 2005).

The helping-hand view of government suggests an important, powerful role for official regulators and supervisors. The line of reasoning essentially is as follows. First, banks are costly and difficult to monitor. Private agents may not have the ability or incentive to supervise banks and will attempt to free-ride. Thus, there will be too little monitoring of

banks, which implies sub-optimal financial performance and stability. Official supervisors can ameliorate this market failure. Second, because of informational asymmetries, some argue that banks are prone to contagious and socially costly bank runs. According to the helping-hand view, government supervision in such a situation can serve a socially efficient role. Third, since many countries choose to adopt a deposit insurance scheme, this situation: (1) creates incentives for excessive risk-taking behavior by banks, and (2) reduces the incentives for depositors to monitor banks. Thus, strong, official supervision will help prevent banks from engaging in excessive risk-taking behavior and thus improve bank development, financial performance and stability (Kane, 1990). In practice, policymakers and international institutions debate and make recommendations on a wide variety of bank regulatory and supervisory practices. In the area of supervisory resources and powers, countries assign very different priorities to bank supervision.

2.1.1.2. The Grabbing-Hand Theory

The grabbing-hand view highlights the potential negative implications of powerful government regulators and supervisors. As noted above, governments with powerful supervisory agencies may use this power to benefit favored constituents, attract campaign donations, and extract bribes. Powerful regulators/supervisors, according to this view, will be less focused on overcoming market failures and more concerned with currying political support and implementing their own arrow objectives. Thus, the grabbing-hand view predicts that powerful supervision and regulation will be positively related to corruption and will not improve either bank financial performance or stability (Kane, 1990). The grabbing-hand view provides a quite different perspective on regulating entry. While there may exist valid economic reasons for regulating entry, this view stresses the negative effect of such limits on corruption and economic efficiency. According to the grabbing-hand view, politicians and regulators use entry restrictions to reward friendly constituents, extract campaign support, and collect bribes (Shleifer and Vishny,1993; and Djankov, La Porta, Lopez-de Silanes, and Shleifer, 2001). Furthermore, an open, competitive banking sector may be less likely to produce powerful institutions that unduly influence policymakers in ways that adversely affect bank financial performance and stability.

Shleifer and Vishny (1998) argue that governments frequently do not implement prudential regulations to ameliorate market failures. Instead, governments implement prudential regulations in a grabbing-hand manner that supports political constituencies

(Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2001). The grabbing-hand alternative is based on the assumption that government failure is at least as important as market failures. Accordingly, the grabbing-hand theory predicts that countries with powerful official supervisors, limits on bank activities, and restrictions on entry will tend to have higher levels of corruption with no corresponding improvement in bank financial performance or stability. This view therefore predicts that governments focusing more on empowering private-sector control of banks are more likely to promote bank development than governments taking a more hands-on approach to regulation.

2.1.2. Bank Regulation and Financial performance

This study was also based on three theories namely; theory of economic efficiency, trade-off theory and the buffer theory.

2.1.2.1. Trade-Off theory

Trade-Off theory suggested by Myers (1984) emphasize a balance between tax saving arising from debt, decrease in agent cost and bankruptcy and financial distress costs (Oruc, 2009). The Trade-Off theory is the oldest theory and is connected to the theory from Miller and Modigliani on capital structure that emphasize on optimal capital structure. Modigliani and Miller (1958) posit that averagely, the capital structure of a firm does not depend on their cost of capital. The argument is that the choice of the type of capital to employ does not depend on their cost but other factors. The use of low cost debt helps to offset the increase in the unit cost of higher-cost equity capital as a consequence of the associated rise in risk. According to the theory, companies do not have optimal equity - debt finance mix since it does not influence the choice of capital to use (Admati & Hellwig, 2013).

In the banking, the debt-equity mix would be different from other companies. Fama& French (1992) in their analysis did not include the financial based companies since they are highly leveraged. Mitchell Berlin (2011) posits that the practice of financial intermediation is inherently levered. He stated that banks use liquid liabilities leading to high leverage. In other word, optimal level of leverage is achieved by balancing the benefits from interest payments and costs of issuing debt (Jahanzeb, Bajuri, Karami, &AhmadiMousaabad, 2014). It was suggested that leverage will increases firm's value, because enhancing leverage is coinciding with the market's realization of value (Ross,

1977). Second, agency costs related to equity will be reduced by debt. These agency costs are such as free Legal flow problem or also called over investment problem (Jensen, 1986). Third, debt will reduce the agency cost of management so that it disciplines managers.

While, Sheikh & Wang (2010) stated that Trade Off theory expected to choose a target capital structure that maximizes the firm value by minimizing the costs of prevailing market imperfections. Bankruptcy cost is a cost directly incurred when the perceived probability that the firm will default on financing is greater than zero. One of the bankruptcy costs is liquidation cost, which represents the loss of value as a result of liquidating the net assets of the firm. Another bankruptcy cost is distress cost, which is the cost a firm incurs if stakeholders believe that the firm will discontinue (Chen, 2011). This theory also called as tax based theories and bankruptcy costs. It assumed each source of money has its own cost and return and these are associated with the firm's earning capacity and its business and insolvency risks (Awan & Amin, 2014). Therefore, firm with more tax advantage will issue more debt to financed business operation and the cost of financial distress and benefit from tax shield are balanced (Chen, 2011).

2.1.2.2. Buffer Theory

This theory points out that as bank approaches the minimum capital requirements they tend to raise capital to avoid costs which may be incurred in case of breach of set regulatory capital. According to Milne and Wiley (2001), buffer is a term used to show the excess capital held by the bank beyond the minimum requirement. This implies that banks are forced to raise the level of their capital ratio when coming close to the required minimum level. According to Calem and Rob (1999) breaching the regulatory provisions will lead to penalties. Banks prefer to maintain capital in excess of prudential limits to reduce the chances of falling below legal capital requirements. They observed that there exists U-shaped relationship between capital and risk taking for banks. Undercapitalized banks tend to take more risks anticipating that bankruptcy cost can be shifted to Deposit Insurance Corporation. Adequately capitalized banks invest in risky portfolio anticipating of higher profits which can be used for continued improvement of their capital position (Rime, 2001).

Supporting the theory, Gropp and Heider (2009) argue that buffer capital has several functions which are, promotional, protective, regulatory and operational. Operational function is related to the support of banks activities and ensuring volumes which in turn leads to gains for the institution. Promotional function is explained by how banks ensure that they have enough capital to ensure growth and meet the expectations of the stakeholders hence promoting economic growth. The protective function in the bank's capital is seen in its ability to cushion banks against unexpected losses and ensuring business continuity and reliability. As management ensures that adequate capital is held to absorb any unanticipated losses the capital ends up playing regulatory function hence protecting the banks from breach of capital requirements (Volkov, 2010).

According to this theory banks may aggressively increase their loan book without increasing their capital base hence the requirement for capital standards. In order to avoid this risk most banks prudentially have set their own benchmarks which is higher than regulator's standard. The excess capital leads to increase in operations and this end up improving the financial performance. The theory is relevant to the study since it supports holding of excess capital. Excess capital leads to reduction of costs which could result in penalties in case of breach of regulatory requirement and also support operations end result being improved financial performance.

2.1.2.3. Theory of economic efficiency

The concept of economic efficiency comes easily to the economist. Given an economic objective and information on relative prices, an individual optimum is defined as a profit maximizing objective given input and output prices, or cost minimization given factor inputs and input prices. Under certain optimistic or restrictive assumptions, economic efficiency for the unit is generalized into an equilibrium that can be construed as a socially efficient equilibrium (Koopmans, 1951; Lange, 1942).

From Farrell (1957), economic efficiency can be separated into technical efficiency and allocative efficiency. The formal definition of technical efficiency according to Koopmans (1951) is a case where an increase in any output requires a reduction in at least one other output or an increase in at least one other input. Similarly, a reduction in any input requires an increase in at least one other input or a reduction in at least one output. From the definition of technical efficiency comes technical inefficiency which is a position

where a producer could produce the same output with less of at least one input or use the same inputs to produce more of at least one output.

The basis of theory of economic efficiency is the requirement that banks must render their banking services at the lowest possible cost (Aly et al. 1990). An organization is considered technically efficient if it consistently achieves more output from the same quantities of inputs as compared to other organizations. The various variations in economic efficiency among organizations in most cases are caused by differences in technical efficiency. The differences are mirrored in the values of the actual profit functions of the organizations at a given output and input prices (Isik and Kabir, 2002).

2.1.3. Bank Regulation

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 (Barth et. al., 2006). More specifically, bank prudential regulations exist for safeguarding the industry against systemic risk, protecting consumers and to achieve stability. Regulation is also important for the efficiency of the banking industry (Jalilian H, Kirkpatrick C, Parker D, 2007). Therefore, the assessment of some of regulatory variables appears important. As argued by Gilbert (1984), a criticism of the methodology of earlier market structure studies is that the role of bank regulation was always neglected. There may be strong interactive effects between regulation and other variables which could have a significant effect on market concentration and firm financial performance. For example, interest rate controls and a high degree of entry barriers facilitate market collusion with the result that even markets with low concentration may exhibit collusive behavior. In contrast, it may be argued that the protection which regulation affords may motivate banks to seek risk reduction by choosing safer operating strategies, resulting in a quiet-life type of market structure (Hicks J, 1935). Therefore, it is useful to mention that there exist two imperative types of bank prudential regulations that have significant influence on the financial performance of banks (Molyneux P, Thorton J, 1992). This incorporates the structural regulation (concerned with banking market and financial performance) and prudential such as liquidity requirement, capital adequacy, reserve ratios, interest rate, and capital requirement issues in banks. Therefore, in terms of measures, where there are high profits and collusive behavior in banking market, the regulatory authorities enhance banking competition using the structural regulation. The prudential prudential regulations are required to enhance bank safety and wider economy as a whole.

2.1.4. Regulation and Financial performance of Commercial Banks

Bank's financial performance is determined by other factors which include and not limited to Legal reserve requirement, liquidity requirement, lending interest rate, capital adequacy ratio, as well as Minimum capital requirement.

2.1.4.1. Legal Reserve Requirement

The Legal reserve requirement ratio imposed by the NBE on banks (LRR): it represents the rate that banks should extract from their deposits in order to keep it at the NBE. These deposits are held in the LRR Account at no interest Thus, the lower the LRR, the more deposits volume that can be exploited by the Bank in lending, which increases the size of the credit facilities granted by banks. Several studies (Olokoyo, 2011; Younus and Akhta, 2009; and Fatima& Samreen, 2015) have indicated that the LRR is considered an influential factor on the bank lending. It is expected that this variable has a negative effect on the proportion of credit facilities. Scott E. Hein and Jonathan D. Stewart (2002), argue that central banks impose reserve requirements for a couple of reasons. For one, reserve requirements are a tool of monetary policy. Reductions in reserve requirements would allow the NBE to expand the money supply and lower interest rates. A second reason for the reserve requirements is to improve the safety and soundness of depository institutions. The higher the reserve requirement, the safer depository institutions are held to be.

2.1.4.2. Liquidity Requirement

Bank liquidity, in particular, refers to the ability of the bank to ensure the availability of funds to meet financial Commitments or maturing obligations at a reasonable price at all times. Banks should be liquid enough to satisfy the withdrawal needs of depositors and credit demand of borrowers. It is the bank's ability to immediately meet Legal obligation, cheques, other withdrawal obligations and legitimate new loan demand while abiding by existing reserve requirements (Agabada and Osunji,2013). Hence, Commercial Banks should check their liquidity position in short time interval as the survival of commercial banks depends greatly on customers' confidence that can easily eroded due to illiquidity (Adeyanju, David, and Oluwayinka 2011)

Liquidity can also refer to a characteristic of a financial instrument that defines its capability of absorbing large trading volumes without its price being significantly affected

(Brunnermeier and Pedersen, 2007). This set of attributes can be referred as market liquidity of a financial instrument. In addition to this, the quantity of liquid assets available in an economy can be taken as part of liquidity. In this case it includes central bank facilities, monetary aggregates and other highly liquid assets. This can be defined as macroeconomic liquidity. Since market as well macroeconomic liquidities are critical for liquidity risk management, these aspects of liquidity risk should be taken into account (Stragiotti, 2009).

The important element of current assets is Legal which is the most liquid asset for the operation of any business. It is the input needed to effective business continuity. A bank as a business concern needs to have Legal and liquid assets which it can easily convert into Legal at short notice. Pandey (2011) identifies the types of assets available to a bank to include Legal, deposits with the central bank, treasury bills. Thus, for banks to remain in the business of financial intermediation, they must formulate policies to ensure the availability of Legal and liquid assets in the asset portfolio at any point in time.

Liquidity which is mostly measured by; assets classified as liquid to total assets as well as bank's advances to deposits has a positive relationship to bank's profitability (Liargovas& Skanda, 2008). Liquidity shows firm's position to meet due obligations. It involves a situation whereby a financial institution is able to obtain sufficient funds to meet short term obligations either by raising short term debt or converting existing assets to Legal. The size of the liquid assets held by the bank is one of the factors affecting the size of bank lending because the high liquidity ratio reduces the proportion of loans granted. In their lending activities financial institutions have to balance between funding long term projects and short term. Short term funding ensures that banks maintain a buffer against liquidity shocks. Banks strive to ensure that liabilities and assets are matched since any mismatch can lead to a bank run (Holmstrom, & Tirole, 2000).

Liquid assets include Legal in hand, balances with banks in country and outside the country and money at call on short notice (Jayanta k. 2012). Liquid assets to total deposits ratio indicates the ability of the bank to meet its deposit obligations with available liquid funds. Total deposits include demand deposits, savings deposits, term deposits and other deposits. Liquid assets to total assets measure of liquidity indicate the percentage of a bank's total assets in liquid form. Higher the percentage better is the liquidity and vice versa. Term deposit to total deposit ratio indicates that total proportion of term deposit in

the total deposit. If the proportion of term deposit is more in total deposit that is not good for long term survival of any bank. Lowest ratio of term deposit to total deposit is favorable one (Ashish Gupta, 2015). The liquidity ratio will be measured by the sum of the Legal and balances of the National Bank, the balances and deposits of the banks and the banking institutions and the financial assets of the trade and dividing the result by the total deposits. It is expected to have a negative effect of this variable on the proportion of credit facilities.

Diamond and Rajan (2001) argument is that inadequate liquidity might lead to loss of viable projects. Liquidity crisis might force a bank to obtain high interest rate loans which will lead to decline of returns. Adequate liquidity helps banks to increase their lending in case of attractive market opportunities. Banks need to balance between holding too much liquidity and lending needs since much liquidity will mean less investment and less returns. According to Liargovas and Skanda (2008) holding high liquidity is beneficial for banks as it can be useful to support activities when external finance is unavailable.

According to Jhingan (2000), a bank needs a high degree of liquidity in its assets portfolio since liquidity of assets refers to the ease and certainty with which it can be turned into Legal. The bank must hold a sufficient large proportion of its assets in the form of Legal and liquid assets for the purpose of profitability. If the bank keeps liquidity the uppermost, its profit will be low. In the other hand, if it ignores liquidity and aims at earning more, it will be disastrous for it. Thus a bank must strike a balance between the objectives of liquidity and profitability. This balance must be achieved through liquidity management.

2.1.4.3. Minimum Capital Requirement

Minimum capital requirement is the minimum amount of liquid capital that banks should raise to entry the regulated market (Staschen, 2003). This requirement is an absolute measure of solvency and is usually established by primary regulation (Staschen, 2003). It is justified on the grounds of influencing the structure of the financial system. It serves as a cushion in periods when the institution shows an unhealthy situation due to its own financial performance or to exogenous factors such as economic downturns (Christen et al., 2003). Some argue that the high minimum capital requirements could act as barriers to market entry to possible new players that are not able to raise capital for the initial stages as a regulated institution (Janson, 1997). But, on the other hand, a high minimum capital

requirement could help to mitigate moral hazard behavior among shareholders (Janson et al, 2004). In addition, a high minimum capital requirement is often seen as one tool for limiting the number of institutions that the supervisory body should be responsible for monitoring, especially if the supervisory resources are scarce (Schmidt, 2000).

Capital requirement is one of the areas of government regulation on banks because with limited liability, owners may have an incentive to engage in riskier ventures, and minimum capital requirements become important in determining the amount that bank owners must have at risk (Lamoreaux, 1994). Capital adequacy one of the components of capital requirement could play a crucial role in aligning the incentives of bank owners with depositors and other creditors (Berger, Herring, and Szego, 1995); The main reason for banks to have capital adequacy is if bank owners have more capital at risk, the gains that they would enjoy from risk business, would be compensated by the potential loss of their capital if their bank were to experience large losses.

Regarding the capital requirement, the NBE issued various directives such as directive No. SBB/3/95 which focuses on the contribution in kind of the initial capital requirement and stated capital contribution in kind is not allowed for fulfilling minimum required capital and even if the bank fulfills its requirement the capital contributed in kind must not exceed 25% of paid up capital. Similarly, on directive No. SBB/4/95 the NBE issued various requirements that after banks fulfill the initial minimum capital they are subject to the following obligations in order have sound reserves account in their NBE. This obligation is to transfer from its total annual profit 25% to its reserve account until the reserve equals its capital (if their reserve reaches the capital of the bank only 10% of profit is required to be transferred to their reserve account). On the other hand, this directive also forces banks to have provisions for loans, advances and bad or doubtful receivables; the value of any assets lodged or pledged to secure liabilities, including contingent liabilities that are not included in the calculation made to ascertain the bank's compliance with capital and reserve requirements. This directive also obliges banks to amortize its capitalized expenditure within a maximum period of five years and to fully cover its operating and accumulated losses from its annual net profit and not to pay dividend to shareholders until such losses are fully covered.

There is also another directive which forces banks to maintain 5% of their liabilities (birr and foreign exchange) and liabilities held in the form of demand deposit (currency, saving and time deposits) in its reserve account. Therefore, the above directive required to fulfill banks in case of capital requirements are very hard and can easily substitute for the deposit insurance in developed countries and can prevent savers from loss and banks from entering into risky business.

2.1.4.4. Interest Rate

The National Bank Rate (NBR) is the lowest rate of interest charged on loans to commercial banks by the National Bank of Ethiopia. The level of the NBR is reviewed and announced by the Monetary Policy Committee (MPC) (NBE, 2009). The effect of the interest rate might be positively or negatively effective on the volume of bank lending because the increase in the interest rate may encourage banks to provide more loans, but at the same time could lead to reduced demand for loan borrowers because of their high interest rates.

2.1.4.5. Capital Adequacy Ratio

Capital adequacy shows whether banks have adequate capital in order to meet the withdrawal demand of its customers in crisis period. In other words, it reflects whether the bank has enough capital to bear unexpected losses arising in the future (Türker Kaya, 2001). Capital adequacy is an indicator of the ability of banks to provide funds for expansion and accepting risk of loss caused by the operations of the bank. The difference between total assets and total liabilities is called capital. It is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation. It shows ability of the firm that liability could be privileged. Capital adequacy is the level of capital required by the banks to enable them withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential loses and protect the bank's debtors. According to Misra &Aspal (2013), it is prominent indicators of the financial health of a banking system. It is very useful for a bank to conserve & protect stakeholders' confidence and preventing the bank from being bankrupt. According to Chen, 2003 to prevent the bank from failure it is necessary to maintain a significant level of capital adequacy. Capital adequacy is a measure of the overall financial strength of a bank. The higher the capital adequacy ratio, the higher the level of protection available to

depositors and It is vital for maintaining soundness of the banking system since it acts as a cushion against panic or bank run or uncertainties (Keovongvichith, k., 2012).

2.2.Empirical literature

This section reviews empirical literature on effect of bank prudential regulations (liquidity requirement rate, capital adequacy ratio, legal reserve requirement, and capital requirement) on financial performance of private commercial banks in Ethiopia.

2.2.1. Studies in Global Context

Capital Adequacy Regulation and Financial performance

Sufian et al (2008) argue that capital structure which includes shareholders' funds, reserves and retained profit affect the profitability of commercial banks because of its effect on leverage and risk. Karki (2004) also found that the positive relationship between capital adequacy and profitability, Joshi (2004) found that the liquidity and banks' loan are positively related to banks profitability and Maharjan (2007) revealed that the capital adequacy and liquidity is positively associated with banks profitability.

Odunga (2016) studied the determinants of Kenyan commercial banks operating efficiency and found bank capital adequacy as one of the most significant factors which affect bank operating efficiency, for banks to manage their operating cost, they need to increase their capital. Supporting the rationale of increasing capital requirements, Das and Ghosh (2006) found a positive significant relationship between bank capital ratio and operating efficiency. Sangmi and Nazir (2010) also suggested that, capital adequacy ratio has direct effect on commercial banks' profitability in India

Ejoh and Iwara (2014) assessed the effect of capital adequacy on deposit money banks' profitability in Nigeria for the period 1981-2011 on five selected banks. The study found out that capital adequacy plays a significant role in explaining banks' profitability. The study recommends that banks should be well capitalized to enable them enjoy access to cheaper sources of funds with subsequent improvement in profit levels which would help the public maintain confidence in the banks and also accommodate the credit needs of customers. There is existence of strong relationship on the effect of prudential regulations on level of capital, banks which are closer to the minimum regulatory capital adequacy

improves their capital adequacy by capital increase while reducing risk taking activities (Alkadamani, 2015). Capital adequacy relates positively to profitability of banks because it is a confidence booster to the depositors, public and regulatory authority (Olalekan, 2013).

Ikpefan (2015) studied the effect of bank capital adequacy ratios, management and financial performance in the Nigerian commercial banks. The study revealed that capital adequacy ratio has negative effect on commercial banks' financial performance . The study recommends that regulatory authorities put in place measures to raise the level of capital adequacy ratio to avoid future bank collapse. Similar study conducted by Torbira and Zaagha (2016) revealed the existence of significant long run relationship between bank financial performance variables and capital adequacy indicators in the Nigerian banking industry: that capital adequacy strongly and actively stimulates and improve the financial performance of banks in Nigeria. The study recommends that bank managers should improve on the management of bank. Vianney (2011) concluded that capital requirement ratio, liquidity ratio and management efficiency ratio are not significant in affecting financial performance of commercial banks in Rwanda.

Abdulazeez (2014) investigated the financial performances of Saudi commercial banks during the period 2000-2013. The study used Panel data, Linear Multiple Regression model and Ordinary Least Squares to estimate the effect of the driver ratios like capital adequacy, asset quality, operational efficiency, bank size, net loan to total deposits, liquid assets to total assets. The study found that at the pool level, that capital adequacy, operational efficiency, bank size, net loan to total deposits and liquid assets to total assets have positive and significant relationship with ROA but asset quality has negative and significant relationship with ROA. Similarly, capital adequacy, bank size and liquid assets to total assets have positive significant relationship with ROE, whereas net loan to total deposits has positive but insignificant relationship with ROE. Asset quality has negative and significant relationship and operational efficiency has negative but insignificant relationship with ROE. All the determinant variables excepting capital adequacy and operational efficiency of banks have positive significant relationship with NIM. Capital adequacy has positive but insignificant relationship with NIM and operational efficiency has negative but significant relationship with NIM.

Deli and Hasan (2016) investigated the real effect of bank capital regulation on loan growth by using bank level data in 125 countries and found that stringent capital regulation affects the growth of loan negatively in short term, mostly for low capitalized banks, however they find positive long-term effect of Capital regulation on loan growth They also revealed that compliance in international regulatory guidelines such as Basel's pillars has much less effect for growth of loan.

Liquidity Requirement and Financial performance

Liquidity management can have different effect on financial performance according to different researchers. According to Devinaga Rasiah (2010) commercial banks are required by regulators to hold a certain level of liquid assets. And the reason behind this regulation is to make sure that the commercial banks always have enough liquidity in order to be able to deal with bank runs. There have been several studies conducted and still on-going debates to investigate the relationship between liquidity requirement and bank profitability (Marozva, 2015).

Kurawa and Abubakar (2014) examined the effect of liquidity on Nigerian Banks profitability for the period 2003-2012 on five selected banks. The purpose of the study was to establish the relationship between the liquidity and profitability of the banking sector in Nigeria and to examine whether liquidity has a positive effect on bank's profits within the period under study. The study employed Randomness in selecting the sample size for the research to eliminate bias. The finding of the study revealed that there is positive relationship between liquidity and profitability of commercial banks in Nigeria.

Joshi (2004) analyzed financial performance through the use of appropriate financial tools and to show the cause of change in Legal position of the two banks. The study found that liquidity and bank loan are positively related to bank profitability. In his study on bank liquidity management in New York, Vossen (2010) argued that Establishment of bank prudential regulations helps banking institutions in New York to avoid the liquidity risk that exposes banks to financial difficulties which lead to depositor runs, fleeing of investors and tougher financing.

Using panel data of eight Malaysian commercial banks for the period 2005-2011, Said (2014) analyzed the effect of net stable funding ratio (NSFR) on Malaysian commercial

banks profitability. The result of the study shows that liquidity ratio is an important factor in affecting the sample banks' profitability. He emphasized that the ability of banks in managing the stability of their funding sources as well as liquidity of its assets is an advantage to them and is translated into higher profitability.

Lamberg and Valming (2009) researched on effect of liquidity management on profitability of commercial banks in Sweden. They found that, firms which had tightened their liquidity management strategies had good financial benefits of their commitment. This shows that, there is an evidence of strong relationship between liquidity management and firm's financial performance. Wambu (2013) investigated the effect of liquidity on the profitability of 44 DMBs between 2008 and 2012 using the LCR and current ratio as proxy for liquidity on DMBs profitability. The study shows a positive relationship between profitability and liquidity of commercial banks in Kenya. Banerjee and Mio (2017) study the effect of liquidity regulation on banks and found that tighter liquidity regulation did not reduce the banks' loan and asset instead it altered the bank to adjust the balance sheet composition. This argument may have a negative effect through its effect on long term investment may reduce interest margin as well as the cost efficiency of investment made by bank. Indeed, they also found liquidity regulation have no effect on the interest margin of the bank. However, liquidity regulation has a significant and negative effect on the inter-bank market or NBE investment.

Adebayo O. et al. (2011) assessed the effect of liquidity on profitability of commercial banks in Kenya for the period 2009 to 2013. The study employed a descriptive research design incorporating panel data obtained from the annual published financial statements which were analyzed using descriptive and inferential statistics. The findings of the study show that all the variables Liquidity, has statistically significant and positive relationship with banks' profitability. The study recommends that banks should invest heavily in assets if substantial gains have to be realized, maintain adequate liquidity levels though in the form of short term marketable securities in order to realize profits and aggressively identify viable investment opportunities and link such opportunities to customer deposits.

The findings of studies conducted so far resulted in varying conclusions. Below are some findings by a number of researchers that support the absence of any significant relationship between bank liquidity and financial performance. Lartey et al. (2013) examined the effect of liquidity on the profitability of listed banks in Ghana for the period

2005 to 2010. The study revealed that the liquidity and profitability position of listed banks in Ghana declined over the study period. The regression and correlation analysis revealed that there was a weak positive and statistically insignificant relationship between liquidity and profitability of listed banks in Ghana. Abdullah and Johan (2014) examined the effect of liquidity on commercial bank in Bangladesh. The study sampled five commercial bank using panel data over a five-year period where return on assets and return on equity were used to measure bank profitability and loan deposit ratio, deposit asset ratio and Legal deposit ratio. The results of the study showed that there is no significant relationship between liquidity and profitability of listed commercial banks in Bangladesh.

A study carried out by Muriithi and Waweru (2017), examined the effect of liquidity risk on financial performance of 43 registered commercial banks in Kenya within the period of 2005 and 2014. The study using Panel data techniques of random effects estimation and generalized method of moments (GMM) discovered that NSFR is negatively associated with bank profitability both in long run and short run while LCR does not significantly influence the financial performance of commercial banks in Kenya both in long run and short run. A study conducted by Molefe and Muzindutsi (2015) on the effect of capital and liquidity management on profitability of major South African Banks for the period 2004 to 2014 revealed that there was weak relationship between liquidity and profitability of leading banks in South Africa. The study concludes that; South Africa banks should revise the liquidity management guideline to determine optimal liquidity level in order to improve financial performance. Ibe (2013) investigated the effect of liquidity management on the profitability of banks in Nigeria for the period 2003 – 2012. The result of the study revealed the absence of a significant effect between liquidity and profitability among banks in Nigeria.

Legal Reserve Requirement and Financial performance

Udeh (2015), studied the effect of monetary policy instruments on profitability of commercial banks in Nigeria: a case of zenith bank Plc for the period 2005-2012.The study utilized time series data and Pearson Product moment correlation technique was used to analyze the data collected while t-test statistic was used in testing the hypotheses. The study found that Legal reserve ratio does not have any significant effect on

profitability of Zenith Bank Plc and recommended that management of banks should look beyond monetary policies to enhance their profits.

Ndugbu M.O. & Okere P. A. (2015) investigated the effect of monetary policy on the financial performance of deposit money banks in Nigerian for the period 1993-2013. Ordinary Least Square and co-integration were used to evaluate the effect of monetary policy on the financial performance of deposit money banks. The study revealed that amongst all the monetary policy variables (bank deposit rate, bank lending rate, Legal reserve ratio and liquidity ratio) considered in the model, only bank deposit rate has significant relationship though inverse relationship.

The study conducted by Arif and Anees (2012) on Liquidity risk and financial performance of banking system in Pakistan for the period 2004 to 2009 revealed that increase in Legal reserves increases a bank's earnings because adequate Legal reserves will also help the bank to avoid fire sale risk and decrease the bank's reliance on the repo market thus reducing the cost associated with overnight borrowing. The study recommended that a bank should maintain sufficient Legal reserves to mitigate liquidity risk.

A study carried out by Punita& Somaiya (2006) investigated the effect of monetary policy on the profitability of banks in India for the period 1995-2000. The monetary variables were bank rate; lending rates, Legal reserve ratio and statutory ratio, and each regressed on banks profitability independently. Lending rate was found to exact positive and significant influence on banks profitability, which indicates a fall in lending rates will reduce the profitability of the banks. Also bank Legal reserve ratio and statutory ratio were found to have significantly affected profitability of banks negatively.

In addition, S. Fatima Abid and Lodhi (2015) examined the relationship between reserve requirement ratio and banks profitability in Pakistan for the period 2005-2014. Their study emphasized on the effect of changes in reserve requirement on commercial banks' profitability and how it affects the return on equity and return on asset. They concluded that positive changes in reserve requirement have an inverse effect on banks profitability. On the other hand, according to UREMADU (2012) there is a positive relationship between reserve requirement, and banks profitability. They studied the reserve

requirement in Nigerian economy for the period 1980-2006 and found that reserve requirement has a positive effect on banking profits.

Minimum Capital Requirement and Financial performance

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

The study conducted by Barth et. al. (2004) found out that while stringent capital requirements are associated with fewer non-performing loans, capital stringency is not robustly linked to banking sector stability, development or financial performance, when controlling for banks. However, because capital is more expensive than deposits, banks will generally choose to operate with the minimum capital level specified by differences in regulatory regimes. Pasiouras et. al. (2006) finds a negative relationship between capital requirements and banks' soundness as measured by Fitch ratings. In contrast, Pasiouras (2008) reports a positive association between technical efficiency and capital requirements, although this is not statistically significant in all cases. The empirical results are yet again mixed. Barth et. al. (2004) indicate that there is no strong association between bank development and financial performance and official supervisory power. However, the results of Barth et al. (2002) show those more powerful government supervisors are associated with higher levels of non-performing loans, while Barth et. al. (2003) find that official government power is particularly harmful to bank development in countries with closed political systems. Beckmann (2016) and Pasiouras et. al. (2009) were found negative effect of capital regulation. He noted that, high capital requirement reduces the risk of the banks and this leads low profit and financial performance. The banks may not stretch to perform better for high cost of capital. Moreover, shareholders may not monitor banks with stringent capital requirement and may result bank failure to worst.

Gual (2011) evaluated the capital requirement under the Basel III and its effect on the banking industry. Gual found that the existing theory and evidence raise doubt on the effect of the regulation. According to his discussion the capital requirement of Basel III accord is unlikely to reduce the risk-taking threat of the banks, instead, it is to reduce the faster capitalization in the banking industry and this recapitalization could result high cost (inefficiency) in the banking industry as well as the economy in the short run in the fact of limited supply of credit and sovereign debt crisis. This has high risk aversion effect than risk reduction. Moreover, he showed that the regulatory methods adopted by Basel III accord do not consider the bank financial risk; it only focused on the capital ratio.

Lending Rate and Financial performance

Rao (2006) investigated the effect of monetary policy on the banks profitability mainly in the financial sector of India by studying various instruments of monetary policy. The lending rates have been found to have positive relationship with banks' profits which indicates a rise in lending rates will increase the profitability of the banks. When the Bank Rate, SLR and LRR is included the regression coefficient is insignificant to explain the relationship between bank profitability and the monetary policy instrument in the case of public sector banks. Similarly, a study carried out by Punita& Somaiya (2006) revealed that Lending rate has exact positive and significant influence on banks profitability, which indicates a fall in lending rates will reduce the profitability of the banks. According to Sattar(2014) there is strong and positive correlation between rate of interest and commercial banks' profitability. It means if the value of interest rate is increases/decreases then as result value of banks' profitability will also increases/decreases. Gradually, interest spread of banking sector of Pakistan is rising. As a result, changes in the interest rate depress the savings and investment and on the other hand it increases the efficiency of banks" lending. Similarly, when interest rate is high, the rise in lending rate is higher than the deposit rates which as a result increases the bank operating income. But on the other side when interest rates are low then rise in deposit rate is higher than the lending rates.

Okoye and Eze (2013), examined the effect of bank lending rate on the financial performance of Nigerian Deposit Money Banks between 2000 and 2010. It specifically determined the effects of lending rate and monetary policy rate on the financial performance of Nigerian Deposit Money Banks and analyzed how bank lending rate

policy affects the financial performance of Nigerian deposit money banks. The result confirmed that the lending rate and monetary policy rate have significant and positive effects on the financial performance of Nigerian deposit money banks.

Rashid et al. (2014) investigated the casual relationship between interest rate imposed by state bank of Pakistan and bank financial performance taken as ROA and ROE. The study focused in depth over monetary policy effect on financial performance of banking industry of Pakistan by studying monetary transmission for the period 2007 to 2011, using interest rate as its measure. The finding of study reveals that interest rate has significant inverse relationship on firm financial performance.

2.2.2. Studies in Ethiopia

Dakito (2015) conducted a study to assess the financial performance of banking sector in Ethiopia and also to see the relation between capital adequacy and banks' financial performance for the period of 2000-2013. The study used both descriptive and econometric analyses. The descriptive analyses were made using CAMEL approach and central tendency measures. The result shows that, as compared to other banks NIB's overall financial performance was good. In addition to the descriptive data analysis, the study also employed regression model, GLS, which is used to see whether capital adequacy which is measured by the amount of shareholders' fund affect the bank financial performance which is measured by Return on asset (ROA). The finding shows that shareholders' fund is the main factor that determines the financial performance of banking industry. Therefore, there exist positive relationship between capital adequacy and bank financial performance.

Eden Kebede (2014) examined the effect of national bank regulation on private commercial banks' financial performance for the period 2004 to 2013. The results of panel data regression analysis showed that reserve requirement had negative and insignificant effect on profitability. Similarly, Bereket Nigussie (2017) carried out a study to empirically explore the monetary policy and macroeconomic determinants of Ethiopian commercial banks' financial performance using balanced panel data regression analysis for the period of 14 years (2003-2016) annual audited financial statements of 6 banks and macroeconomic data. The empirical result revealed that all monetary policy and macroeconomic variables except Legal reserve requirement ratio are statistically

significant in determining financial performance of Ethiopian commercial banks. The study recommends the National Bank of Ethiopia moderate the minimum policy rate as instrument for regulating commercial banks operations and facilitating investment in the economy and the authority better re-evaluate the policies governing Legal reserve requirement ratio in order to influence bank reserves considering its current insignificant effect on commercial banks credit creation role.

Lelise (2015) attempted to assess the relation of the NBE bill purchase directive with liquidity, credit portfolio, asset- liability matching position and credit decision of these Banks. Descriptive research design was used for the study. The result indicated that the NBE- bill purchase directive affects the liquidity position of the new entrant private banks as the bill shows steady growth whereas slow pace is exhibited in deposit growth on the other side. Thus, it raises the stiff competition of banks for mobilizing loanable fund. In addition to this, the Banks credit decision process tilted towards fulfillment of the limit set by NBE with respect to loan tenor and product. Consequently, the Banks are facing challenges as they couldn't satisfy the customers demand. The study recommends, the National Bank of Ethiopia to revisit the NBE- bill purchase directive. Moreover, the study recommends the new entrant private Banks should form consortium and further examine the severity of the problem and presented to the concerned organ.

Anteneh (2014) assessed the effect of Banking Regulation on the financial performance of Private Banks. Qualitative methods were used to assess qualitative data collected through the utilization of a questionnaire and interviews to catch the opinion on the effects of selected prudential regulations on the private banks profitability and liquidity. The findings of the study show that the "Reserve Requirement" regulation positively affected liquidity and had a positive but weak effect on ROA and ROE while having a negative effect on NIM Lending cap and Bill purchase had a negative effect on the profitability indicators ROA and ROE but both did not have a statistically significant effect on NIM and liquidity. In general, the study indicated that the banker's general opinion was skewed towards a negative attitude and the Banking industry is found to be highly regulated and some prudential regulations are having negative effect on the financial performance of private banks. The study recommends that NBE should therefore revise some of the directives and shall focus on strengthening the private banks so as to make them ready for WTO accession.

Memru (2014) investigated the effect of NBE bills purchase on the profitability of private commercial banks in Ethiopia by using panel data of sixteen private commercial banks. The study used quantitative research approach and secondary financial data are analyzed by using multiple linear regression models for the three bank profitability measures; Return on Asset (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). Regression model was applied to investigate the effect of Capital adequacy, NBE bills, liquidly & total loans to total asset. Growth rate on major bank profitability measures (i.e., (ROA), (ROE), and (NIM) separately). The study finds that exposure to government bill has moderate effect on banks profitability in the past years. However, if the policy persists without amendment or phase out it will definitely create a significant negative effect on banks financial performance.

Shibiru (2014) assessed the implications NBE bills purchase directive on the development of private commercial banks in Ethiopia. Mixed research approaches and descriptive research type were employed. The findings of the research shows that NBE bills purchase directive have negative implications on loanable fund, income and expense, profit, Capital and reserve, and deposit of private commercial banks, whereas positive implications on branch expansion and product development of private commercial banks. According to the finding, the directive affected the loanable fund, income, profit, reserve, and deposit of private commercial banks via reducing them. The implication of the directive implied on expense of private banks via increasing overall expenses. Thus, the NBE bills purchase directive has negative effect on almost all financial performances of private commercial banks, which further has negative implications on the development of private commercial banks. The study recommends lessening the percentage amount of allotment, increasing interest rate paid for the bills and phasing out the directive.

Shimelis (2016) examined the effect of NBE bill purchase requirement on the financial performance and liquidity of private commercial banks covered the period from 2007 to 2014. The study finds that purchasing NBE bill had a negative and significant effect of the profitability of private commercial banks in Ethiopia. Similarly, the requirement of purchasing NBE bill had negative and significant effect on the liquidity of private commercial bank in Ethiopia. This is due to the fact that the requirement of purchasing NBE bill has a possibility of creating maturity mismatches because Private Banks collect savings mostly at two to three-year maturity and even shorter in some cases and fulfilling

the 27 percent requirement means that they have to freeze these resources for 5 years.

2.3.Summary and Literature Gap

The literature reviewed above noted that commercial bank could be examined in two main polar: bank regulation and financial sustainability. The term financial performance is mostly used interchangeably with other concepts like profitability, financial efficiency, financial performance (Ledgerwood, 1999; Hulme and Mosley, 1996). This study uses the term financial performance to mean the ability of commercial banks to exist indefinitely by generating returns ("ceteris paribus) while providing financial services.

The empirical studies identify that there is a need of regulating Banks with emphasis on the effect of the prudential regulations to Banks financial performance. A number of studies exist in banking regulation and financial performance of commercial banks. Capital requirements lead to reduced credit risk especially for commercial banks with a larger market share (Agoraki, Delis & Pasiouras, 2011). According to Naceur & Kandil (2009), when banks do not have sufficient capital, it increases their intermediation cost. This emphasizes the need to regulate capital. Tsuma & Gichinga (2016) found out that Change in capital requirement affects financial performance of commercial banks because fund that were to be lend out to earn interest income are put up as capital thus denying commercial banks revenue. Kirimi (2015) found out that lending rates positively influence financial performance of financial institution because it is the main determinant of interest income. Ben and Omran (2011) found that the bank-specific variables particularly bank capitalization and credit risk exhibit a positive and significant effect on net interest margin, cost efficiency and profitability of banks, but no significant influence from macroeconomic and financial development variables. In addition, they identified that regulatory and institutional variables have an influence on bank financial performance. Ejoh and Iwara (2014) assessed the effect of capital adequacy on deposit money banks' profitability in Nigeria. The study shows that capital adequacy plays an important role in explaining bank returns on assets (ROA) which is a measure of bank profitability. Similarly, Pasiouras et al. (2009) in their study on the effect of bank capital regulation on bank stability found that an increase in the bank minimum capital requirement decreased bank financial stability.

In Ethiopia, several research studies have been done in relation to commercial banks: Eden (2014) studied the Effect of National Bank Regulation on Banks Financial performance. The study included bank regulation variables such as credit cap, reserve requirement and NBE bill; (Shibru, 2014; Shimels, 2016; Tesfaye, 2014; Mintesnot and Semeneh, 2018; Anteneh, 2014; Tisgemariam, 2015; Lelise, 2015; and Memru, 2014) did an assessment of the effect of NBE bill purchase directive on the financial performance of commercial banks in Ethiopia. Addisu, (2017) studied the effect of bank regulation on commercial bank's profitability by incorporating equity investment, reserve requirement and capital requirement as variables; Mekonen and Melesse, 2014; and Simeneh, 2018) analyzed the effect of bank regulation on profitability of private commercial banks in Ethiopia.

This paper will be different from earlier studies by considering other bank regulation variables such as capital requirement, capital adequacy ratio, reserve requirement, liquidity requirement and control variables like lending interest rate, bank size, inflation, and gross domestic product growth. This study will therefore be motivated to fill the knowledge gap on effects of the various bank regulation variables on financial performance of commercial banks in Ethiopia with real GDP growth, lending interest rate, inflation and bank size as the control variables. The following research question will therefore be explored.

2.4. Conceptual Framework

Below is a schematic diagram which shows the interrelationship among the key variables to be used in guiding the study as illustrated in Fig. 2.1

Independent   Variables   Dependent   Variable

Bank Regulation Variables
- Capital Adequacy Ratio (Total Equity to Total Assets)

- Liquidity Ratio (Total Current Assets to Total Current Liabilities)

- Legal Reserve Requirement (Reserve Account in NBE/ Total Assets)

- Capital Requirement (Natuaral Log of Paid-Up Capital Amount)

Financial Financial performance

(ROE)

(Net Income to Shareholder's Equity)

Control Variables
- Gross Domestic Product (GDP)
- Inflation
- Bank Size
- Lending Interest Rate

Source: The conceptual framework or model of the study adopted from Marie Vianney K. J. (2013) and Khayongo V. (2016).

Chapter Three

Research Methodology

3.1. Introduction

This chapter describes the research design and methodology which is used in testing relationship between banks' prudential regulations and financial performance of private commercial banks in Ethiopia. Elements discussed include; research design, target population, sample size and sampling procedure, data collection and data analysis.

3.2. Research Design

A research design is a plan or a blueprint of how to design conducting the research. The major purpose of this research is to assess the effects of banking prudential regulations on financial performance of Ethiopian private commercial banks. This is mainly an explanatory study attempting to determine the effect of regulation on banks' financial performance. Explanatory research type was used in this research because the study identifies the cause and effect of bank regulation on commercial banks profitability. The methodology to conduct this study was based on the general and specific objectives of the paper. Specifically, regression analysis was used to measure the effect of determinants on the dependent variable.

3.3. Research approach

According to (Creswell, 2009) quantitative approaches employ closed-ended instrument based questions, financial performance data, attitude data, observational data, and census data statistical analysis. Therefore, the study used the quantitative approach to examine the effect of bank regulation on private commercial banks' financial performance in Ethiopia.

3.4. Population and sampling procedure

According to NBE (2015/16) report, the number of banks declined to 18 from 19 due to the merger of Construction & Business Bank with Commercial Bank of Ethiopia. Of the 18 banks 16 were private such as; Dashen Bank S.C (DB), Awash International Bank S.C (AIB), Wegagen Bank S.C (WGB), United Bank S.C (UB), Nib International Bank S.C

(NIB), Bank of Abyssinia S.C (BOA), Lion International Bank S.C (LIB), Cooperative Bank of Oromia S.C (CBO), Berehan International Bank S.C (BRIB), Buna International Bank S.C (BIB), Oromia International Bank S.C (OIB), Zemen Bank S.C (ZB), Addis International Bank S.C (ADIB), Abay Bank S.C (ABB), Enat Bank S.C (EB) and Debub Global Bank S.C (DGB).

The target population is ten (10) private commercial banks. The total population is sixteen but for the study purpose, the sample size is ten. Among the non-probability sampling techniques purposive sampling is used to select samples from the total population. Non-probability sampling technique is selected because random sampling is not appropriate for the study. Purposive sampling was employed; since the study covered a period of 10 years from 2009 to 2018, and there are only ten private commercial banks which operate for 10 and above years in Ethiopia. The sample size is ten, which includes, Dashen Bank S.C (DB), Awash International Bank S.C (AIB), Wegagen Bank S.C (WGB), United Bank S.C (UB), Nib International Bank S.C (NIB), Cooperative Bank of Oromia S.C (CBO), Lion International Bank S.C (LIB), Oromia International Bank S.C(OIB), Zemen Bank S. (ZB) and Bank of Abyssinia S.C (BOA). Therefore, the matrix for the frame is 10*10 that includes 100 observations.

3.5. Data Collection, Presentation and Analysis Techniques
3.5.1. Data and Data Collection Instruments

Applying appropriate data gathering instruments help researchers to combine the strengths and amend some of the inadequacies of any source of data to minimize risk of irrelevant conclusion. Consistent and reliable research indicates that research conducted by using appropriate data collection instruments increase the credibility and value of research findings (Koul 2006). This study used secondary data for the private commercial banks in Ethiopia. According to (Kiecolt& Nathan 1985) secondary data is the use of information which is readily available from the previous study findings and can be accessed from different publications or sites. The use of secondary data is faster and also cost effective since it uses someone's information to achieve present objective.

Data was obtained from bank's annual audited financial reports, as well as internet and website of the banks, for the period between 2009 and 2018 which is equivalent to 10 years. All data was collected on annual base.

3.5.2. Method of data Presentation and analysis

This study used panel data which ensures enough data is available to the researcher because it contains both time series and cross-sectional dimensions thus, minimal biasness in parameter estimators (Baltagi, 2005). Data was collected for a period of ten (10) years from ten (10) private commercial banks in Ethiopia, totaling up to 100 samples which is sufficient for both time series and cross sectional dimension. Multiple regression is applied to analyze data collected from the ten (10) sample population which helps researcher to gain more knowledge on the relationship between several independent variables (predictor) and the dependent variable (Garson, 2014), thus being a good method of data analysis in this study which has four (4) predictors (capital adequacy, liquidity requirement rate, legal reserve requirement, and capital requirement) and one dependent variable (ROE). To test the proposed hypotheses, statistical analyses has been carried out using the following methods: First, descriptive statistics of the variables (both dependent and independent) is calculated over the sample period and this was in line with Malhotra (2007), which states using descriptive statistics methods helps the researcher in picturing the existing situation and allows relevant information. Then, a correlation analysis between dependent and independent variables is made. Finally, ordinary least square/OLS regression approach including all of its assumptions is employed. Data collected from different sources are analyzed by using E-views 9 software package.

3.6. Model specification

The nature of data in this study, allowed using panel data model which is deemed to have advantages over cross sectional and time series data. Panel data involves the pooling of observations on the cross-sectional over several time periods.
As Brook (2008) stated the advantages of using panel data set; first and perhaps most importantly, it can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time-series or pure cross- sectional data alone. Second, it is often of interest to examine how variables, or the relationships between them, change dynamically (over time). To do this using pure time-series data would often require a long run of data simply to get a sufficient number of observations to be able to conduct any meaningful hypothesis tests. But by combining cross-sectional and time series data, one can increase the number of degrees of freedom, and thus the power of the test, by employing information on the dynamic behavior of a large number of

entities at the same time. The additional variation introduced by combining the data in this way can also help to mitigate problems of multicollinearity that may arise if time series are modeled individually. Third, by structuring the model in an appropriate way, we can remove the effect of certain forms of omitted variables bias in regression results. In analyzing the effect of bank regulation on private Commercial banks financial performance in Ethiopia between 2009 and 2018 using econometric method, the following regression equation is developed to explain the effect of the National Bank's prudential regulations on financial performance of private commercial banks in Ethiopia.

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \ldots + \beta_n X_{it} + \varepsilon$$

The econometrics model is extracted from the above equation as follows:

$$Y_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 LRR_{it} + \beta_3 LRR_{it} + \beta_4 CR + \beta_5 INTR + \beta_6 SIZE_{it} + \beta_7 INFL + \beta_8 GDP + \varepsilon_{it} \quad *$$

Y_{it} = ROE = Financial performance

β_0 = level of financial performance in the absence of the bank

$\beta_1, \beta_2, \beta_3\ldots$ = Régression coefficients

CAR_{it} = Capital Adequacy Ratio

LRR_{it} = Liquidity Requirement Ratio

LRR_{it} = Legal Reserve Requirement

CR_{it} = Capital Requirement

$INTR_{it}$ = Lending Rate

GDP_{it} = Gross Domestic Product

$INFL_{it}$ = Inflation

$SIZE_{it}$ = Bank Size

ε_{it} = Error

I = Name of Bank (1....10)

t = Time (2009 - 2018)

Different methods are used in determining the value of both independent variables and dependent variable as shown below.

ROE= Net Income to Shareholder's Equity

CAR (capital adequacy ratio) = Total Equity to Total Assets

LRR= Liquidity requirement ratio = Total Current Assets to Total Current Liabilities

LRRR= Legal Reserve Requirement Ratio = Reserve account in NBE / total asset

CR= Natural log of total paid up capital amount

INTR= Average Annual Lending Interest Rate

GDP = Annual Average Gross Domestic Product

SIZE = Bank Size = Natural Log of Total Assets

INFL = Inflation

3.7. Measurement of Variables

The operational definition and measurement of dependent and independent variables are presented under this section.

Dependent variable

Return on equity: it measures profitability by revealing how much profit a bank can generates with the money shareholders have invested and it represents the rate of return generated by the owners' equity. ROE measured by the ratio of net profit to total equity.

Independent Variables

Capital adequacy: it is the amount of Equity which holds against risky assets reserve to protect the depositors from any unexpected loss. It is expressed by total Equity to total asset ratio.

Capital requirement: Minimum capital requirement is the minimum amount of liquid

capital that banks should raise to entry the regulated market (Staschen, 2003).

Liquidity requirement ratio: is the ratio of total specified liquid assets to total current liabilities. This specifies the required ratio of certain selected assets and securities to the deposit liabilities of commercial banks. The central Bank prescribes, whenever it so desire, the percentage of specified liquid assets that commercial banks can hold against their deposits. The liquid assets which are used include Legal and short term government securities e.g. treasury bills and treasury certificates. In this study it was described by the liquidity requirement ratio.

Reserve Requirement ratio: Reserve requirement ratio is the minimal percentage of deposits to be kept up with central bank by the banks. It is one of the tools of monetary policy used to control money supply in the economy. Any changes made in LRR affects the availability of money with the bank for credit in the system thereby influencing the money supply in the economy.

Lending rate: The average interest rate on loans (INTR): the interest rate on loans is considered the most important source of income for the bank, and the high interest rate is usually accompanied by the increase in the amount of the money offered for lending. If the value of interest rate is increases/decreases then as result value of banks' profitability will also increases/decreases (Sattar, 2014).

The table below shows how different variable indicators will be measured which assist in data analysis**.**

Table: 3.1 Measurements of Variables

Variable Type	Variable	Measurement	Measurement Scale	Data Collection Method
Dependent	Financial performance (ROE)	Net Income to Total Equity	Ratio	Secondary Data
Independent	Capital Adequacy	Total Equity to Total Asset	Ratio	Secondary Data
Independent	Liquidity Requirement	Total Current Assets to Total Current Liabilities	Ratio	Secondary Data
Independent	Legal Reserve Requirement	Reserve Account in NBE/Total Asset	Ratio	Secondary Data
Independent	Capital Requirement Ratio	Natural Log of Total Paid-up Capital Amount		Secondary Data
Independent	Lending Rate	Average Annual Lending Interest Rate	Rate	Secondary Data

3.8. Diagnostic Tests on CLRM Assumptions

In order to insure the validity of the parameters diagnostic tests were performed and test for normality, multicollinearity, heteroscedasticity and autocorrelation is done.

3.8.1. Normality

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model. As noted by (Gujarati, 2004), OLS estimators are BLUE regardless of whether the error terms are normally distributed or not. If the disturbances are independently and identically distributed with zero mean and constant variance and if the explanatory variables are constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding β's.

However, as per the central limit theorem, if the disturbances are not normally distributed, the OLS estimators are still normally distributed approximately if there are large-sample data. Thus, since the sample size for this study is large enough, it is approximately considered as normally distributed. This implies that residuals are asymptotically normal in this study.

3.8.2. Multicollinearity

The term multicollinearity refers to the existence of a "perfect," or exact, linear relationship among some or all explanatory variables of a regression model (Gujarati, 2004). If it exists, the remedy is to drop a variable with a high R-square or do nothing. The correlation matrix was used to detect the presence of severe multicollinearity. A correlation coefficient is high if it is in excess of 0.8.

3.8.3. Heteroscedasticity

According to (Gujarati, 2004) this is a situation whereby the error variances are not constant. This is a violation of one important assumption of the classical linear regression assumptions. To detect heteroscedasticity, the research employed the Whites test for heteroscedasticity. The problem of continuing to use data that suffers heteroscedasticity is that whatever conclusion or inferences, they will be misleading.

3.8.4.   Autocorrelation

The violation of the basic assumption that residuals are mutually independent results in serial autocorrelation. In time series data the successive residuals tend to be highly correlated. Autocorrelation can also be extended to cross section data where the residuals are correlated with those of the neighboring units (Brooks, 2008). The Durbin-Watson method is used to test for autocorrelation. A Durbin Watson statistic around two is generally accepted though there are zones of indifference and zones of both positive and negative correlation.

Chapter Four

Results and Discussion

In the preceding chapters important literatures relating to the topic were reviewed that gives enough understanding about the topic and used to identify knowledge gap on the area. To meet the broad research objective and to answer research questions and to test research hypotheses under it the research design used for this study also discussed in the preceding chapter. In this chapter the data collected was presented and an important correlation and regression analysis finding was discussed.

The current chapter has five sections. Under the first section (section 4.1.) the descriptive statistics of the dependent and independent variables was presented followed by correlation analysis under section 4.2. Section 4.3 presents the test for the classical liner regression model/CLRM. Then, the results of the regression analysis were presented under section 4.4. Finally, discussions for the results of the regression analysis were made under section 4.5.

4.1. Descriptive statistics of the data

The descriptive statistics for the dependent and independent variables are presented below. The dependent variable is banks financial performance measured by Return on Equity. The independent variables were GDP, Inflation, Bank Size and lending interest which are considered as control variables and the bank regulation variables were capital requirement, capital adequacy ratio, reserve requirement, and liquidity requirement rate which were used to see the effect of bank regulation on private commercial banks financial performance . Table 4.1 bellow Present the descriptive statistics of the dependent and independent variables.

Table 4.1 descriptive statistics of dependent and independent variables

	ROE	LRR	LRRR	CAR	CR	INTR	GDP	INFL	SIZE
Mean	0.0230	51.51298	10.0000	0.2305	0.123	11.63708	10.3250	15.68541	9.6750
Median	0.0280	44.15714	10.0000	0.20470	0.117	11.88000	10.4500	12.03835	9.6960
Maximum	0.0380	147.7029	20.0000	0.9952	0.192	12.75000	11.8000	36.4000	10.2950
Minimum	0.0190	23.34143	5.00000	0.1187	0.064	10.50000	6.50000	2.80000	8.8280
Std. Dev.	0.0030	32.04928	5.03003	0.149769	0.031	0.721958	1.46080	10.51870	0.3290
Obs.	100	100	100	100	100	100	100	100	100

The Return on Equity ranged from 0.0190 to 0.0380 and the standard deviation was 0.0030. It is noted here that the amount of the Return on Equity is considered comparable between commercial banks in general, as it enjoys a relative stability.

Table 4.1 also shows the descriptive statistics of bank regulation variables namely liquidity requirement ratio, legal reserve requirement ratio, capital adequacy ratio, and capital   requirement. Lending rate proxied by average lending interest rate.

The mean value of liquidity ratio was 51.51 % that was above the NBE requirement (i.e. 20 %) (NBE Directive No. SBB/57/2014)). The standard deviations of 32.05 % show higher dispersion of liquid assets to total deposits ratio from its mean for the commercial banks in Ethiopia. The maximum and minimum values of LR were 147.70 % and 23.34 % respectively. It is noted here that the proportion of liquidity at the Ethiopian commercial banks is high, unstable and varied from one bank to another and from one year to another. This may be due to the NBE bill purchase requirement and absence of secondary market.

The average legal reserve requirement ratio (LRRR) was about 10% during the study period, and the reserve requirement ratio ranged from 5.00000 to 20.0000 with a standard deviation of 5.03003, reflecting the presence of fluctuation in the Legal reserve requirement ratio during the study period. From descriptive statistics table 4.1 revealed the following; the mean Capital requirement ratio for the studied period was at 12.3% with a fluctuation of 3.1%.

The remaining independent variables were control variables that can affect banks financial performance . The mean value of real GDP growth rate was 10.32 % indicating the average real growth rate of the country's economy over the past 10 years. The maximum growth of the economy was recorded in the year 2011 (i.e. 11.8%) and the minimum was in the year 2016 (i.e. 6.5%). Since the year 2003 the country has been recording double digit growth rate with little dispersion towards the average over the period under study with the standard deviation of 1.46.   The other Control variable proxied by average lending interest rate was related with interest rate that is lending interest rate. The mean value of the lending interest rate over the period under study was 11.63 % with the

maximum and minimum values of 12.75 % (in the years 2018) and 10.5 % (in the year 2009) respectively. There was little variation of interest rate margin towards its mean value over the periods under study with the value of standard deviation 0.721 %. When interest rate is high, usually rise in lending rate is higher than the deposit rate which as a result increases the bank spread. The result implies that commercial banks enjoy a high spread.

The general inflation rate (i.e. 15.68 %) of the country on average over the past ten years was more than the average GDP. The maximum inflation was recorded in the year 2009 (i.e. 36.4%) and the minimum was in the year 2010 (i.e. 2.8%). The rate of inflation was highly dispersed over the periods under study towards its mean with standard deviation of 10.51 %, reflecting the presence of a fluctuation in the rate of inflation and its difference from one year to another. The inflation rate is relatively high during the study period.

Finally, it is noted that the dependent variable is normally distributed where the importance of the Jarque-Bera test was greater than 5%, which shows the normal distribution of the variable. The number of the views within the study sample was 100, which reflect the data of 10 banks in ten years.

4.2.   Correlation analysis

According to Brooks (2008), if *y* and *x* are correlated, it means that *y* and *x* are being treated in a completely symmetrical manner. Thus, it is not implied that changes in *x* cause changes in *y*, or indeed that changes in *y* cause changes in *x* rather, it is simply stated that there is evidence for a linear relationship between the two variables, and that movements in the two are on average related to an extent given by the correlation coefficient. Table 4.2 bellow shows the correlation coefficient between the dependent variables and independent variables.

Table 4.2 Correlation matrix among the dependent and independent variables

	ROE	LRR	LRRR	CAR	CR	INTR	GDP	INFL	SIZE
ROE	1.0000	0.51298	-0.180	0.481	0.317	0.63708	0.175	-0.065	0.198

Source: Financial statement of sampled private commercial banks and own computation through E-views 9.

Output of correlation analysis (Table 4.2) represented in matrix of pair-wise correlation. This study has calculated correlation of dependent variables with independent macroeconomic and monetary policy variables. It was found that ROE is negatively correlated with legal reserve requirement and inflation with a correlation coefficient of -0.180 and -0.65 respectively. Table 4.2 also shows that liquidity requirement, capital adequacy ratio, capital requirement, lending interest rate, GDP, and size are positively correlated with a correlation coefficient of 0.51298, 0.481, 0.317, 0.63708 0.175 and 0.198 respectively. The linear relationship between LR & ROE, LRR & ROE, GDP & ROE, CAR & ROE, CR & ROE, SIZE & ROE and INTR &ROE was statistically different from zero/statistically significant. Thus, it is implied that changes in the independent variables cause changes in return on equity (dependent variable).

4.3. Testing assumptions of classical linear regression model (CLRM)
4.3.1. Test for average value of the error term is zero (E (ut) = 0) assumption

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term (i.e. **α**) was included in the regression equation, the average value of the error term in this study is expected to be zero.

4.3.2. Test for homoscedasticity assumption (Var (ut) = σ2)

This is the variation of the residuals across all the observations under study. It has been assumed thus far that the variance of the errors is constant. This is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. To test this assumption, the ARCH test was used having the null hypothesis of heteroscedasticity. Both F-statistic and chi-square (χ) 2 tests statistic were used.

Table 4.3 Test for homoscedasticity

Heteroskedasticity Test: ARCH

F-statistic	2.204243	Prob. F(1,90)	0.1229
Obs*R-squared	2.206827	Prob. Chi-Square(1)	0.1397

Source: Financial statement of sampled private commercial banks and own computation through E-views 9.

Both the F- and χ2 -test statistic give the same conclusion that there is evidence for the absence of heteroscedasticity. In the case of ROE both the *F*- and $\chi2$ -test statistic give the same conclusion that there is evidence for the absence of heteroscedasticity. Since the p-values in all of the cases were above 0.05, the null hypothesis of heteroscedasticity should be rejected (appendix 1). The null hypothesis of heteroscedasticity should be rejected at 10% level for the F-statistics and χ2 test statistic. Generally, in all of the regression models used in this study it was proved that the variance of the error term is constant or homoscedastic and we had sufficient evidence to reject the null hypothesis of heteroscedasticity.

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

The test for autocorrelation was made by using Breusch- Godfrey Serial Correlation LM Test. Breusch-Godfrey Serial Correlation LM Test is more general than the DW test, and can be applied in a wider variety of circumstances since it does not impose the DW restrictions on the format of the first stage regression. The null hypothesis is no autocorrelation between the error term and its lag. Breusch-Godfrey Serial Correlation LM (appendix-2) proved that both the F- and χ2 -test statistic give the same conclusion that there is evidence for the absence of autocorrelation since the p-values in all of the cases were above 0.05.

Table 4.4 Test for autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.689531	Prob. F(1,77)	0.0585
Obs*R-squared	6.840903	Prob. Chi-Square(1)	0.0500

4.3.4. Test for Normality assumption (ut ~ N (0, σ2)

A normal distribution is not skewed and is defined to have a coefficient of kurtosis 3. Bera- Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how fat the tails of the distribution are. The Bera-Jarque probability statistics/P-value is also expected not to be significant even at 10% significant level (Brooks 2008).

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According to Gujarati (2004), the JB is a large sample test and our sample of 100 was equal to the frame was large; we considered the JB test also. As shown in the histogram kurtosis is 3.215705), and the Jarque-Bera statistics was not significant even at 10% level of significance as per the P- values shown in the histogram in the appendix (i.e. 0.660553). Hence, the null hypothesis that is the error term is normally distributed should not be rejected and it seems that the error term in all of the cases follows the normal distribution.

Series: Standardized Residuals	
Sample 2009 2018	
Observations 100	
Mean	2.26e-16
Median	-0.079649
Maximum	10.53063
Minimum	-11.14482
Std. Dev.	3.814099
Skewness	0.195267
Kurtosis	3.215705
Jarque-Bera	0.829355
Probability	0.660553
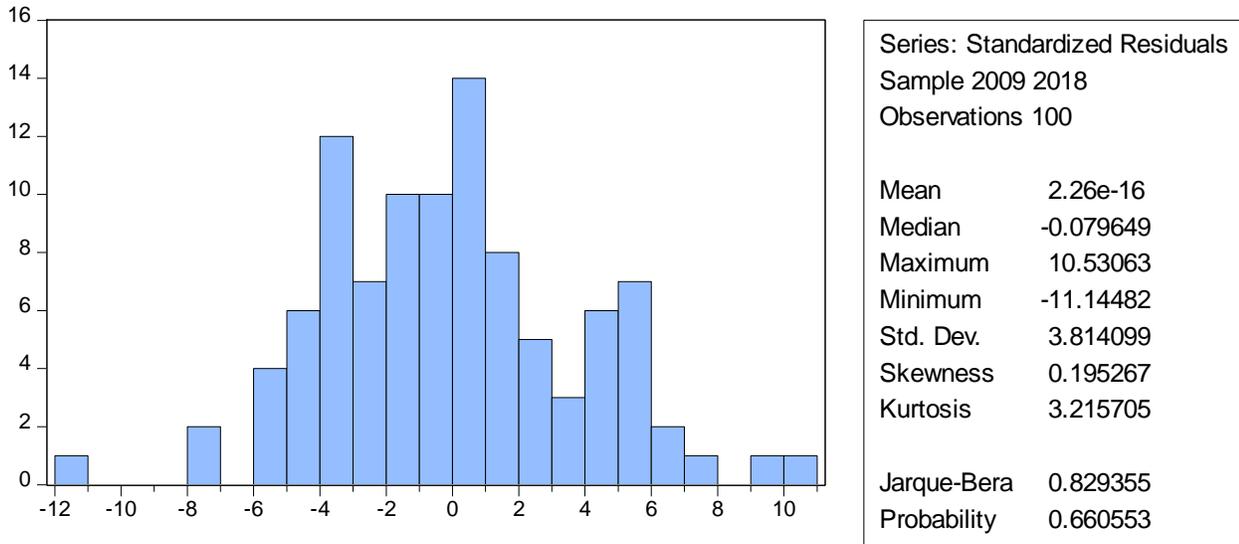
4.3.5. Test for absence of series multicollinearity assumption

This assumption is concerned with the relationship exist between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brooks 2008). Multicollinearity condition exists where there is high, but not perfect, correlation between two or more explanatory variables (Cameron and Trivedi 2009; Wooldridge 2006). According to Churchill and Iacobucci (2005), when there is multicollinearity, the amount of information about the effect of explanatory variables on dependent variables decreases. As a result, many of the explanatory variables could be judged as not related to the dependent variables when in fact they are. This assumption does allow the independent variables to be correlated; they just cannot be perfectly correlated. If we did not allow for any correlation among the independent variables, then multiple regressions would not be very useful for econometric analysis.

How much correlation causes multicollinearity however, is not clearly defined. While Hair et al (2006) argue that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Malhotra (2007) stated that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. Kennedy (2008) suggests that any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results. This indicates that there is no consistent argument on the level of correlation that causes multicollinearity. According to Gujarati (2004), the standard statistical method for testing data for multicollinearity is analyzing the explanatory variables correlation coefficients (CC); condition index (CI) and variance inflation factor (VIF). Therefore, in this study correlation matrix for eight of the independent variables shown below in the table were estimated. The results in the following correlation matrix show that the highest correlation of 0.546052which is between CR and LRR. Since there is no correlation above 0.75 and 0.9 according to Malhotra (2007) and Hair et al (2006) respectively, we can conclude in this study that there is no problem of multicollinearity.

Table 4.5. Correlation matrix of explanatory variables

	LRR	LRRR	CAR	CR	INTR	GDP	INFL	SIZE
LRR	1.000000							
LRR	0.180393	1.000000						
CAR	-0.253886	-0.212783	1.000000					
CR	0.079272	0.546052	-0.234172	1.000000				
INTR	0.273247	-0.384766	0.147464	0.005179	1.000000			
GDP	-0.181950	0.267052	0.253107	0.062215	0.082486	1.000000		
INFL	-0.044697	0.048522	0.067637	0.013172	-0.099317	0.096968	1.000000	
SIZE	0.031230	0.027854	0.001354	0.001287	-0.003265	0.019876	0.007634	1.000000

Source: Financial statement of commercial banks and own computation through E-views 9.

4.3.6. Choosing Random effect (RE) versus fixed effect (FE) models

Random Effect versus Fixed Effect Models: Econometrics model used to examine the effect of Liquidity Requirement, Legal Reserve Requirement, Capital Adequacy Ratio, Minimum Capital Requirement, Lending Interest Rate, Growth domestic product, Inflation and Bank Size on financial performance of private commercial banks in Ethiopia was panel data regression model which should be either fixed-effects or random-effect model. The study used Hausman Specification Test to identify whether fixed effect or random effect model is appropriate for study.

Table 4.6: Result of model selection Test: Hausman test

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	8	0.0421

Source: Developed by the researcher through E-views 9

As shown in Table 4.6, the Hausman specification test for this study has a p-value of 0.0421 for the regression models. This indicates that p-value is significant and then the null hypothesis is rejected justifying as fixed effect model is appropriate for the given data set in this study.

4.4. Results of the regression analysis

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

Effect of Bank Regulation - Results

Operational model: the operational panel regression model used to find the statistically significant bank regulation factors of private commercial banks' financial performance measured by ROE was:

$$ROE_{it} = \beta_0 + \beta_1(LRR,it) + \beta_2(LRRR,it) + \beta_3(CAR,it) + \beta_4(CR,it) + \beta_5(INTR,it) + \beta_6(GDP,it) + \beta_7(INFL,it) + \beta_8(SIZE,it) + \varepsilon_{it}$$

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Table 4.7 Regression results for effect bank regulation on commercial banks' financial performance measured by ROE.

Dependent Variable: ROE
Method: Panel EGLS (Cross-section weights)
Date: 01/05/20   Time: 20:44
Sample: 2009 2018
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.00953	13.70919	1.751346	0.0836
CAR	-0.671426	0.099467	-6.750232	0.0000
CR	-0.103967	0.191375	-0.543262	0.5884
LRR	0.344031	0.097859	3.515587	0.0007
INTR	2.280308	0.874469	2.607650	0.0108
CRR	-0.158171	0.104868	-1.508282	0.1353
INFL	-0.060681	0.066924	-0.906717	0.3672
GDP	-0.357321	0.443221	-0.806193	0.4225
SIZE	-1.961333	0.538516	-3.642108	0.0005

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.777922	Mean dependent var	30.11018
Adjusted R-squared	0.731882	S.D. dependent var	20.36404
S.E. of regression	4.108612	Sum squared resid	1384.217
F-statistic	16.89646	Durbin-Watson stat	1.591578
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.539512	Mean dependent var	23.05810
Sum squared resid	1462.624	Durbin-Watson stat	1.527362

Notes: R^2= 0.777922; Adj R^2 = 0.731882; F-statistics = 16.89646 and Prob (F-statistics = 0.000000), and Durbin-Watson stat = 1.591578

Source: Financial statement of sampled commercial banks and own computation through E-views 9

Table 4.7 presented results of Return on Equity (ROE) as dependent variable and bank regulation, bank specific and macroeconomic explanatory variables for the sample of ten private commercial banks in Ethiopia. The explanatory power of this model is high (i.e. around 73.2 %).   This implies that around 73% of the variability in profitability of

commercial banks in Ethiopia can be explained by the change of the regulatory and control variables included in the model. The regression F- statistic takes a value 16.89646. F-statistics tests the null hypothesis that all of the slope parameters (β's) are jointly zero. In the above case p-value of zero attached to the test statistic shows that this null hypothesis should be rejected even at 1% level of significance. Therefore, the variables are jointly significant in explaining the dependent variable

4.5.   Discussion of the Regression Results

As it is shown in the above table capital adequacy ratio, liquidity requirement ratio, lending interest rate, and bank size were the statistically significant factors affecting financial performance of private commercial banks in Ethiopia. Capital adequacy ratio and bank size had negative and statistically significant effect on ROE at 1% and 5%. Lending interest rate and liquidity requirement ratio had positive and statistically significant effect on ROE at 5%. Moreover, minimum capital requirement, Legal reserve requirement ratio, GDP and Inflation had statistically insignificant effect on private commercial banks financial performance in Ethiopia.

4.5.1.   Bank Regulation Variables

4.5.1.1 Liquidity Requirement Ratio and ROE

The results showed that the coefficient of the liquidity requirement ratio (LRR) was positive and statistically significant, which means that the liquidity requirement ratio does affect the financial performance of commercial banks in Ethiopia. This may imply that when commercial banks have enough liquidity, they can lend out the money to borrowers. In Ethiopia, there has been excess demand for loan, so when commercial banks have more liquidity, they can enjoy higher profit by lending out the money. This result is consistent with what is expected and with what was found by the previous studies such as (Wambu, 2013; Adebayo O. et. al., 2011; and Abdullah & Johan, 2014), though the finding inconsistent with (Abdulazeez, 2014; Vianney, 2011; Joshi, 2004; and Said, 2014). The coefficient estimate and the p-value was 0.344031 and 0.0007 respectively which was significant even at 1% confidence level. Generally, we fail to reject the hypothesis (i.e. there is significant and positive relationship between liquidity requirement ratio and financial performance of commercial banks in Ethiopia).

4.5.1.2 Legal Reserve Requirement Ratio and ROE

The results showed that the coefficient of the legal reserve requirement ratio (LRRR) was negative and statistically insignificant, which means that the legal reserve requirement ratio does not affect the financial performance of private commercial banks in Ethiopia. Reserve requirements are against the interest of commercial banks since they tie up their fund with the NBE. However, commercial banks can offset the negative effect of the capital tie up by charging higher interest rates to borrowers. This may offset the negative effect of the RR hence it may have insignificant effect on profitability of commercial banks. This result is in line with what was found by the previous studies such as Udeh, 2015 and Ndugbu & Okere, 2015), though the finding is inconsistent with (Olokoyo, 2011; Fatima & Samreen, 2015; Ajayi & Atanda, 2012; and Mac Carthy, 2016), The coefficient estimate and the p-value was -0.158171 and 0.1353 respectively which was insignificant even at 10% confidence level. Legal reserve requirement in this equation was inconsistent with to the null hypothesis. Since the coefficient was statistically insignificant we reject the null hypothesis.

4.5.1.3 Capital Adequacy Ratio and ROE

Sufian et al (2008) argue that capital structure which includes shareholders' funds, reserves and retained profit affect the profitability of commercial banks because of its effect on leverage and risk. The results showed that the coefficient of the capital adequacy ratio (CAR) was negative and statistically significant, which means that the capital adequacy ratio affects the financial performance of private commercial banks in Ethiopia. Liability (deposit for commercial banks) is the main source of revenue for commercial banks and it is the cheapest source of finance. In the contrary, capital is expansive hence it can adversely affect the profitability of commercial banks. This result is in line with what is expected and with what was found by the previous studies such as (Torbira & Zaagha, 2016; Alkadmani, 2015; Das & Ghosh, 2006; and Sangmi & Nazir, 2010), though the finding is inconsistent with (Ikpefan, 2015). The coefficient estimate and the p-value was -0.671426 and 0.0000 respectively which was significant even at 1%, 5% and 10% confidence level. Since the coefficient was statistically significant we fail to reject the null hypothesis.

4.5.1.4 Minimum Capital Requirement and ROE

The extent that bank productivity is related to the transformation of inputs like deposits to outputs like loans, capital requirements may affect productivity through various channels. The first channel is through the effect of capital requirements on bank lending, which is generally supported by the theoretical literature. For example, Kopecky and VanHoose(2006) argue that capital requirements influence bank decision-making in terms of both the quantity of lending and the quality of the loans made.

This research found that there is negative and insignificant relationship between minimum capital requirement and ROE. This is inconsistent with findings of (Pasiouras, 2006 and Beckmann, 2016). Therefore, this finding disclosed that capital requirement has negative but statistically insignificant (p-value=0.5884) relationship with financial performance of commercial banks in Ethiopia. The coefficient value of the variable (i.e. -0.103967) indicated a percentage rise/decline in minimum capital requirement ratio of banks resulted in (i.e. 10.39 %) rise/decline in ROE of commercial banks in Ethiopia. Since the coefficient was statistically insignificant we could not say it shows negative effect on banks' financial performance .

Generally, we reject the hypothesis (i.e. there is significant and negative relationship between capital requirement and financial performance of commercial banks in Ethiopia).

4.5.2.   Control Variables

The researcher used two macroeconomic control variables proxied with inflation and GDP and two bank specific variables (bank size) and (lending interest rate) in the regression model.

4.5.2.1 Lending Interest Rate and ROE

The effect of the interest rate might be positively or negatively effective on the volume of bank lending because the increase in the interest rate may encourage banks to provide more loans, but at the same time could lead to reduced demand for loan borrowers because of their high interest rates.

This research found that there is positive and significant relationship between lending interest rate and ROE. The interest rate in general is lower than the inflation rate so even if the interest rate goes high, there will be more demand for loan. Since the deposit rate is set by policy, higher lending rate always results in higher spread to commercial banks which eventually be translated to higher profit. This is consistent with findings of (Rao, 2006; Punita & Sumaiya, 2006; UREMADU, 2012; Satter, 2014; and Gemechu, 2016). However, this result is inconsistent with the findings of (Rashid et.al., 2014; Eden, 2014; and Bereket, 2017). Therefore, this finding disclosed that lending interest rate has positive relationship with financial performance of commercial banks in Ethiopia. The coefficient value of the variable (i.e. 2.280308) generally, we fail to reject the null hypothesis (i.e. there is positive and significant relationship between lending interest rate and financial performance of commercial banks in Ethiopia).

4.5.2.2 Inflation Rate and ROE

The regression output in Table 4.7 reveals that there is negative and insignificant relationship between inflation rate and ROE. Therefore, this finding disclosed that inflation rate has negative and insignificant relationship with financial performance of commercial banks in Ethiopia. The coefficient value of the variable (i.e. -0.060681) indicated a percentage rise/decline in inflation rate resulted in (i.e. 6.06 %) rise/decline in financial position of commercial banks in Ethiopia. Since the coefficient was statistically insignificant we could not say it shows negative effect on banks' financial performance.

4.5.2.3 Real GDP Growth Rate and ROE

The coefficient signs of real GDP growth rate show positive effect on the banks' financial performance. A strong economic condition creates more demand for goods and services which lead to more investment in different sectors hence increase the per capita income as well as the savings, collectively these factors convince to banks to issue more loans and advances (kashif and mohammed 2008). The regression output in Table 4.7 reveals that there is negative and insignificant relationship between real GDP growth rate and financial performance of commercial banks in Ethiopia. The coefficient value of the variable (i.e. -0.357321) indicated a percentage rise/decline in real GDP growth rate resulted in (i.e. 35.7 %) rise/decline in financial position of commercial banks in Ethiopia. This finding was inconsistent with what was found by several studies such as (Imran

&Nishatm, 2013; Rabab'ah, 2015; Zarafat, 2014; Mitiku, 2014; and Sharma and Grounder, 2012), which reported that the economic growth has a positive effect on the banks' profitability.

4.5.2.4 Bank Size and ROE

The coefficient signs of bank size show negative effect on banks' financial performance . The regression output in Table 4.7 reveals that there is negative and significant relationship between bank size and financial performance of commercial banks in Ethiopia. The coefficient value of the variable (i.e. -1.961333).

Finally, the adjusted explanatory power was 73.18%, which is considered high reflecting that the independent variables explain about two-third of the change in the dependent variable. Durbin-Watson statistics (1.59) show that the dependent variable does not suffer from the problem of the serial link. Moreover, the F-statistic (16.89646) shows that the study model is appropriate.

Table 4.8 Summary of actual and expected signs of explanatory variables on the dependent variables

Variables	Expected Signs	Actual Signs
Liquidity Requirement Ratio	Positive & Significant	Positive & Significant
Legal Reserve Requirement Ration	Negative & Significant	Negative & Insignificant
Capital Adequacy Ratio	Positive & Significant	Negative & Significant
Minimum Capital Requirement	Negative & Significant	Negative & Insignificant
Lending Interest Rate	Positive & Significant	Positive & Significant
Real GDP Growth Rate	Positive & Significant	Negative & Insignificant
Inflation Rate	Negative & Significant	Negative & Insignificant
Size	Positive & Significant	Negative & Significant

Chapter Five

Conclusion and Recommendation

1.1.   Introduction

This chapter is a synthesis of the entire thesis and contains a summary of findings, discussion of the findings, conclusions arrived at and policy recommendations. The conclusions and recommendations focused on addressing how bank regulation affects private commercial bank's financial performance in Ethiopia measured as return on equity (ROE).

1.2.   Conclusions

The study examined the effect of bank regulation on private commercial banks' financial performance in Ethiopia from 2009 to 2018. Bank regulation was proxied with liquidity requirement ratio, legal reserve requirement ratio, capital adequacy ratio, and minimum capital requirement. Return on equity (ROE) was used to represent commercial banks' financial performance. The panel data was used for the sample of ten commercial banks in Ethiopia from 2009 to 2018. Data was presented by using descriptive statistics. The balanced correlation and regression analysis for return on equity was conducted. Before performing OLS regression the models were tested for the classical linear regression model assumptions. The models fulfill assumptions of the CLRM. Fixed effect model/FEM was used.

The study findings showed that there was a highly significant relationship between private commercial banks' financial performance and capital adequacy ratio, lending interest rate, liquidity requirement ratio and bank size. The results also indicated that an increase in capital adequacy ratio and bank size cause return on equity to decrease while an increase in lending interest rate and liquidity requirement ratio cause return on equity to increase. A statistically significant relationship was also established between lending interest rate, capital adequacy ratio, and bank size and liquidity requirement ratio. The study also showed insignificant relationship between capital requirement, inflation, GDP and legal reserve requirement and return on equity of private commercial banks in Ethiopia.

The study also established that there is a correlation between the bank regulation variables, macroeconomic variables and bank specific variables and commercial banks'

financial performance with GDP having the highest value and bank size having the lowest correlation value. Based on the results and findings, the study concludes that private commercial banks' financial performance is indeed influenced by bank regulation variables.

1.3.   Recommendations

Based on the findings of the study, the following suggestions were recommended:

- ➢ The study disclosed that capital adequacy ratio were significant bank regulation variable that affects the financial performance of commercial banks. This implies that private commercial banks in Ethiopia used equity in order to meet the regulatory requirement level of capital. This has negative effect on ROE. So the researcher recommended to the banks to find other cheaper source of finance other than equity to meet the requirement.
- ➢ The study disclosed that liquidity requirement ratio were significant bank regulation variable. This implies that an increase in liquidity will lead to an increase in profitability of commercial bank. When commercial banks have enough liquidity, they can lend out the money to borrowers, so when commercial banks have more liquidity, they can enjoy higher profit by lending out the money. It is, therefore, recommended that commercial banks should enhance their deposit mobilization endeavors in a better way than its normal practice.
- ➢ The study result revealed that profitability increases as the asset size decreases. Therefore, it is recommended that Ethiopian private commercial banks' officers and shareholders should effectively manage their total asset.
- ➢ When interest rate is high, usually rise in lending rate is higher than the deposit rates which as a result increases the bank spread. The commercial banks, therefore, should concentrate on their profitability by charging lower interest rate and providing handsome return to depositors.

5.3.   Further Research

This study did not include everything and recommends that another study should be done to augment the findings in this study; it therefore recommends that future research should be directed towards validating the results of this study by conducting a similar research in micro-finance in Ethiopia by collecting data from different sources.

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Appendices

Appendix –1: Tests for the Heteroskedasticity Test: ARCH

Heteroskedasticity Test: ARCH

F-statistic	2.204243	Prob. F(1,90)	0.1229
Obs*R-squared	2.206827	Prob. Chi-Square(1)	0.1397

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/26/19   Time: 18:54
Sample (adjusted): 2 100
Included observations: 92 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.123758	1.562852	2.638610	0.0098
RESID^2(-1)	0.049321	0.105957	0.457973	0.6532

R-squared	0.024661	Mean dependent var	4.339842
Adjusted R-squared	0.014656	S.D. dependent var	13.12353
S.E. of regression	13.19883	Akaike info criterion	8.165838
Sum squared resid	17941.42	Schwarz criterion	8.221052
Log likelihood	68.32461	Hannan-Quinn criter.	8.187622
F-statistic	2.304243	Durbin-Watson stat	1.995748
Prob(F-statistic)	0.362915		

Appendix -2 Breusch-Godfrey Serial Correlation LM Test:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.689531	Prob. F(1,87)	0.0875
Obs*R-squared	6.840903	Prob. Chi-Square(1)	0.0650

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/26/19   Time: 18:55
Sample: 1 100
Included observations: 97
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.739636	2.671906	0.151520	0.3343
LR	0.001152	0.000792	-1.454880	0.1498
LRR	-0.091846	0.234166	-0.391223	0.5645
CA	0.000863	0.053421	0.015432	0.2916
CR	2.646691	1.568520	1.687382	0.0926
INTR	0.548566	0.424886	1.291089	0.2015
GDP	2.716183	1.521925	1.473550	0.1367
INF	-0.007321	0.045613	-0.162345	0.1712
SIZE	0.060123	0.074321	0.013484	0.1832
RESID(-1)	0.243899	0.151924	2.220815	0.0385

R-squared	0.045725	Mean dependent var	-3.92E-15
Adjusted R-squared	-0.028634	S.D. dependent var	0.455450
S.E. of regression	0.461925	Akaike info criterion	1.372826
Sum squared resid	16.42984	Schwarz criterion	1.575394
Log likelihood	-50.65870	Hannan-Quinn criter.	1.454257
F-statistic	0.614922	Durbin-Watson stat	1.754537
Prob(F-statistic)	0.717694		

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Appendix –3: Tests for multicollinearity: correlation matrix

	LR	LRR	CA	CR	INTR	GDP	INF	SIZE
LR	1.000000							
LRR	0.180393	1.000000						
CA	-0.253886	-0.212783	1.000000					
CR	0.079272	0.546052	-0.234172	1.000000				
INTR	-0.273247	-0.384766	0.147464	-0.595179	1.000000			
GDP	-0.181950	0.267052	0.253107	0.062215	0.082486	1.000000		
INF	-0.044697	0.048522	0.067637	0.013172	-0.099317	0.096968	1.000000	
SIZE	0.031230	0.027854	0.001354	0.001287	-0.003265	0.019876	0.007634	1.000000

Appendix – 4: Tests for Model Selection (Random Effect versus Fixed Effect Models):

Hausman specification test

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	8	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.
** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CAR	-1.006256	-1.007760	0.039910	0.9940
CR	0.163663	0.292128	0.013992	0.2775
LRR	0.121163	0.294462	0.004959	0.0139

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INTR	7.592818	4.788533	1.013493	0.0053
LRR	-0.121697	-0.053052	0.008929	0.4675
INFL	0.116623	0.039923	0.002756	0.1440
GDP	0.787159	-0.097075	0.450750	0.1878
SIZE	-2.939297	-2.798398	2.525089	0.9293

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.447275	(9,82)	0.1819
Cross-section Chi-square	14.742572	9	0.0983

Cross-section fixed effects test equation:
Dependent Variable: ROE
Method: Panel Least Squares
Date: 01/05/20   Time: 15:44
Sample: 2009 2018
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.426713	29.39234	-0.150608	0.8806
CAR	-1.007760	0.212180	-4.749557	0.0000
CR	0.292128	0.427157	0.683889	0.4958
LRR	0.294462	0.347677	0.846941	0.3992
INTR	4.788533	1.781807	2.687459	0.0086
LRR	-0.053052	0.185609	-0.285828	0.7757
INFL	0.039923	0.125515	0.318074	0.7512
GDP	-0.097075	0.884915	-0.109700	0.9129
SIZE	-2.798398	1.042611	-2.684028	0.0086

R-squared	0.350080	Mean dependent var	22.37350
Adjusted R-squared	0.292944	S.D. dependent var	8.364960
S.E. of regression	7.033813	Akaike info criterion	6.825024
Sum squared resid	4502.181	Schwarz criterion	7.059489
Log likelihood	-332.2512	Hannan-Quinn criter.	6.919917
F-statistic	6.127149	Durbin-Watson stat	1.510746
Prob(F-statistic)	0.000003		

Appendix – 5: Regression Results

Dependent Variable: ROE
Method: Panel EGLS (Cross-section weights)
Date: 01/05/20   Time: 20:44
Sample: 2009 2018
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.00953	13.70919	1.751346	0.0836
CAR	-0.671426	0.099467	-6.750232	0.0000
CR	-0.103967	0.191375	-0.543262	0.5884
LRR	0.344031	0.097859	3.515587	0.0007
INTR	2.280308	0.874469	2.607650	0.0108
CRR	-0.158171	0.104868	-1.508282	0.1353
INFL	-0.060681	0.066924	-0.906717	0.3672
GDP	-0.357321	0.443221	-0.806193	0.4225
SIZE	-1.961333	0.538516	-3.642108	0.0005

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.777922	Mean dependent var	30.11018
Adjusted R-squared	0.731882	S.D. dependent var	20.36404
S.E. of regression	4.108612	Sum squared resid	1384.217
F-statistic	16.89646	Durbin-Watson stat	1.591578
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.539512	Mean dependent var	23.05810
Sum squared resid	1462.624	Durbin-Watson stat	1.527362

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Appendix – 6: Tests for Normality

	Series: Standardized Residuals
	Sample 2009 2018
	Observations 100
Mean	2.26e-16
Median	-0.079649
Maximum	10.53063
Minimum	-11.14482
Std. Dev.	3.814099
Skewness	0.195267
Kurtosis	3.215705
Jarque-Bera	0.829355
Probability	0.660553