
Bank Regulations and Firm Performance: In the Case of Ethiopian Commercial Banks

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To cite this article:

Jundi Mohammed Yusuf, Anwar Adem Shikur. Bank Regulations and Firm Performance: In the Case of Ethiopian Commercial Banks. *International Journal of Finance and Banking Research*. Vol. 9, No. 4, 2023, pp. 58-67. doi: 10.11648/j.ijfbr.20230904.11

Received: August 8, 2023; **Accepted:** August 30, 2023; **Published:** September 6, 2023

Abstract: Profitability is the basic aim of establishing a business, and banks are not exceptions. Thus, the main objective of the study is to examine the impact of bank regulations on the performance of commercial banks in Ethiopia. The panel data was collected from an audited financial statement of nine commercial banks for eleven consecutive years, 2011–2021. The study employed a quantitative research approach to documentary analysis. The study used a fixed effect model on the regression analysis and used E-View10 software. Return of Asset (ROA) was used as a dependent variable. While the statutory reserve requirements, legal reserve requirements, minimum capital requirement, credit risk, capital adequacy, and inflation as independent variables. The regression result revealed that legal reserve requirements, capital adequacy, and inflation had a positive and significant effect on the performance of selected commercial banks. Moreover, the statutory Reserve requirements were found to have a positive but insignificant impact on the bank's performance. On the other hand, minimum capital requirements and credit risk were found to have a negative and significant impact on the performance of selected commercial banks. The study recommended that the National Bank of Ethiopia (NBE) and other regulatory bodies follow and update reserve requirements, inflation, real GDP growth, capital requirements, and other regulations while considering the short and long-term. The long-term impact of such policy changes on overall economic performance and commercial Banks in Ethiopia are also recommended to improve their capital growth and analyses the borrowers' creditworthiness before lending out funds, and consider the deposit interest rate and sensitivity of customers to such change against inflation.

Keywords: ROA, Bank Regulations, Commercial Banks, Performance, Ethiopia

1. Introduction

The stability of economic growth is critically dependent on the banking sector's efficient and soundful operation [32]. Banks are a vital component of financial institutions that influence the direction of financial markets, which is essential for the success of economic development, particularly in developing nations where a lack of cash makes it difficult to invest in capital [13].

This financial sector serves as a synergizing engine for the overall economy, and in bank-based economies like Ethiopia, its circulating performance in the productive capacity of the economy is analogous to "blood diffusion" [11]. Besides, banks are the sector that is more sensitive to failure than other sectors, and they dwarf economic development when they do

not function in a valuable manner.

Countries around the world have had to deal with a numerous commercial bank failures in the latter two decades of the 20th century. In relation with this, the financial crisis of 2007–2008 demonstrated the devastating effects that bank failure may have on the economy. This demonstrates that in order to prevent the occurrence of economic distress, banks should conduct themselves in a careful and safe manner. Due to this, banks are the most regulated sector, irrespective of the development level of the country [28]. Having the unique role that banks play in the economy, regulation and supervision of banks are necessary to protect consumers and investors as well as to maintain system stability [24]. In addition, the frequently observed crises in the banking sector in emerging countries, which negatively affect the bank profits require regulation and supervision of these markets [14].

Excessive regulation may have negative impacts, even though it serves as a prudential tool to lessen the impact of economic crises on the stability of the financial system and consequent macroeconomic outcomes. This could be happened as a result of the possibility that excessive regulations would raise the cost of financial intermediation and lower banking business profitability. In addition, as banks face tighter restrictions, they will be less able to increase lending and support economic growth in regular times [25].

Each nation has a treasured bank that oversees the state's monetary and fiscal policy. Ethiopia, like many different countries on the earth, has a principal bank that regulates the banking enterprise via issuing recommendations and guidelines relevant to the establishment and management of a banking business. Most operational guidelines are intended to lessen the possibility of financial and liquidity instability in the banking system. Some of the NBE's instructions are provided as part of the monetary policy of the central bank, while others are provided to ensure that the sector is doing enough to deliver money to the most crucial areas of the economy.

With effect from September 11, 2021, the NBE's new monetary policy, which was issued in response to the recent trend of rising inflation, increased the statutory reserve requirement from 5 to 10 percent. As a result, banks will be required to transfer half of their foreign exchange holdings to the national bank. The NBE also published Directive No. SBB/50/2011 in September 2011, which mandates that all commercial banks always maintain a capital-to-risk weighted asset ratio of 8% and specifies the minimum capital adequacy ratio. The NBE increased the minimum paid-up capital for new and existing commercial banks from Birr 75 million (Directives No. SBB/24/99) to Birr 500 million (Directives No. SBB/50/2011) that same year with the aim of improving the ability of commercial banks to absorb unexpected or unusual losses. Banks were required to raise their capital to 2 billion Birr as a result of the NBE's moral persuasion following GTP II.

The earlier directive was recently replaced by the new Minimum Capital Requirements for Banks (Amended) Directive No. SBB/78/2021, which takes effect on April 12, 2021 and specifies that Birr 5 billion in fully paid-up capital is required to obtain a banking business license. This capital must be deposited in a bank (or banks) in the name of the bank under formation and on its account. According to this directive, current banks with paid-up capital below Birr 5 billion must increase it to that amount by June 30 of 2026.

Because it affects the health of the entire economy, bank performance is significant. By enhancing the ease, effectiveness, and accessibility of the saving and investment processes, strong bank performance promotes economic growth. On the other hand, the downfall of one bank might have an impact on all other businesses and banks in addition to its shareholders and depositors [10].

Thus, after carefully reviewing the prior empirical literature, the researcher came to the following conclusion: Given the given factors, it was necessary to undertake the study on the

effect of bank regulations on the performance of commercial banks in Ethiopia. First, although using the same explanatory variables, previous studies' conclusions were inconsistent, revealing conflicting results. For instance, the results of the studies [16, 21, 35] conducted on the effect of a statutory reserve requirement found that the performance of the bank was adversely affected. On the other hand, the researcher discovered that the statutory reserve requirement slightly improved the bank's performance [17]. Second, the recent pattern of an ongoing increase in Ethiopia's general price level has made life more challenging than ever making it necessary to investigate the effect of inflation on bank performance. The socio-political and economic difficulties that have been experienced in Ethiopia make it difficult for banks to recover even the principal of loans and advances, which results in an increase in provisions for losses on loans and advances, thus necessitating the effect of credit risk on bank performance. Lastly, despite their inclusion of the remaining aforementioned variables as independent variables, only one of the previous studies included statutory reserve requirements as independent variables. Therefore, this study examined the relationship between bank regulations and firm performance of Ethiopian commercial banks.

1.1. Objective of the Study

The objective of the study is;

1. To identify the effect of the statutory reserve requirement on the performance of the banks
2. To investigate the effect of the legal reserve requirement on the performance of the banks
3. To examine the effect of the minimum capital requirement on the performance of the banks
4. To find the effect of the credit risk on the performance of the banks
5. To identify the effect of the capital adequacy on the performance of the banks
6. To examine the effect of the inflation on the performance of the banks

1.2. Significant of the Study

The main purpose of the study was to investigate the impact of bank regulations on the financial performances of selected commercial banks in Ethiopia. The findings of this study will be helpful to a variety of stakeholders, including those banks that were the subject of the study, NBE, MOFEC, and other interested users. Finally, the study would serve as a benchmark for the researchers who will conduct the study on similar and related topics to prove its accuracy or use to develop new theories. It would make a significant contribution to the body of knowledge by identifying the effect of bank regulations performance of commercial banks in Ethiopia.

2. Review of Literatures

2.1. Bank Regulation

Internal factors (unique to banks) and external factors

(macro-economic) that represent the economic and regulatory environment in which the bank operates are related to banking regulation. According to Almaqtari, F. A. et al. [6]) Bank regulation is the creation and issuance of precise rules or regulations for the conduct and structure of banking by authorized agencies [19]. This is done in accordance with applicable laws. The banking payment system is crucial for the health of the economy, and bank laws are an attempt to create a solid framework that will ensure users' security and certainty. It aims to establish a regulatory environment where banks are expected to be effective and competitive while offering an acceptable level of financial services across the economy, in addition to retaining public confidence [9].

2.2. Theories of Theories

Generally speaking, there are two theories of banking regulation: (1) the economic theory and (2) the prudential theory.

2.2.1. Economic Theory of Bank Regulation

The development of banking rules and the development of regulatory economic analysis go hand in hand as per this view. Up until the late 1960s, scholars and regulatory authorities analyzed banking laws primarily from the perspective of the public interest justification for those regulations. From that point forward, in the 1970s and 1980s, the private interest concept of regulation was contested and adopted as a new regulatory paradigm, resulting in significant reforms in the banking sector [40].

(i). The Public Interest Views

This theory of regulation is closely related to the public interest perspective. It contends that regulation offers corrective measures against a variety of market failures, including natural monopolies, increasing returns on scale, informational flaws in market transactions, income and wealth distribution, and the negative effects of under-providing for community goods and externalities. This viewpoint views regulation as promoting the general welfare and enhancing the public interest. The following assumptions are made about regulatory authorities: (1) that they are only concerned with efficiency; (2) that they are shielded from pressure from private interest groups; and (3) that they are perfectly rational and well-informed, meaning that neither informational nor computational constraints can have an impact on their decisions.

Regulation in the banking industry from the 1930s through the 1970s concentrated on a variety of market structure laws, banking group structure limits, asset allocation guidelines, and interest rate ceilings. Since they were created to address different types of market failures and were released after the Great Depression, these instruments are simple to defend on the basis of public interest [29].

(ii). The Private Interest Views

This method's primary premise is that regulatory authorities should no longer be expected to enhance social welfare but should instead act in their own best interests. Theorists contend that people are fundamentally self-interested whether

they are acting in public or not, and that the regulating process must be examined as the result of relationships between various groups. The idea of "regulatory capture," which refers to the regulatory system becoming biased in favor of certain interests, has further developed this idea. The regulatory capture literature comes to the extreme conclusion that regulation always produces socially suboptimal results because interest groups inefficiently bargain over prospective utility rents.

2.2.2. Prudential Theory of Bank Regulation

Prudent regulation relates to the financial stability of financial service providers and works to reduce the possibility of those providers being unable to pay their obligations as they become due. Additionally, the General Agreement on Trade in Services uses what appears to be a broader definition by classifying as prudential all policies or procedures taken to safeguard financial services consumers, such as investors or depositors, as well as to uphold the integrity and stability of the financial system [11].

The financial crisis highlights the need to improve micro-prudential regulatory approaches to account for greater risk oversight across the financial system as well as a concern for implementing supervisory actions that support the stability of the financial system. There are three basic components to macroprudential regulation: (1) Modifying how regulatory requirements are applied to institutions in response to changes in the overall economy (i. e., countercyclical capital requirements); (2) imposing controls on the financial sector at the national level to reduce overall risk-taking; and (3) imposing prudential standards for financial infrastructure or companies that provide infrastructure services (i. e., capital standards for derivative clearing houses). There is a large body of literature that examines these several macro-prudential regulation sectors [18].

2.3. The Impact of Bank Regulations on the Financial Performance

2.3.1. Regulatory Variables

Bank's regulatory variables are those variables used to control commercial banks activities and its operational environment in a proper manner. These factors include but are not limited to reserve requirements, capital requirements, and liquidity requirements, which determine how easily banks can convert their assets into cash and how much money they must maintain on hand as reserves.

(i). Statutory Reserve Requirement

It measures the proportion of commercial banks' total assets to reserves held at the National Bank of Ethiopia. This share of the total assets of commercial banks can be utilized for depositor protection and a variety of other activities aimed at preserving the health of the economy and the financial system. It was discovered that the bank statutory ratio had a negative and considerable impact on banks' profits [30].

(ii). Legal Reserve Requirement

The ratio of the legal reserve requirement that the NBE

imposes on commercial banks. This rate is what banks should deduct from their deposits in order to maintain them at the NBE. These funds are kept in the Reserve Account without earning any interest. Therefore, the amount of deposits that can be used by the Bank for lending increases as the LRR decreases, increasing the extent of the credit facilities offered by banks. The reserve requirements are imposed by the central bank for a few different reasons. First, lowering reserve requirements would enable the NBE to increase the money supply and bring down interest rates. This would make reserve requirements an instrument of monetary policy. The ability to increase the safety and soundness of depository institutions is yet another benefit of reserve requirements. Depository institutions are considered to be safer the larger the reserve requirement [8].

(iii). Minimum Capital Requirement

The amount of liquid capital that banks must raise to participate in the regulated market is known as the minimum capital requirement. This condition, which is a certain indicator of solvency, is typically set forth in primary rule [12]. It is one of the factors that is acceptable given that it can affect how the financial system is structured. It acts as a safety net during times when the institution exhibits unhealthy conditions as a result of its financial performance or exogenous events like economic downturns [19].

2.3.2. Macro-Economic Variable

Macroeconomic variables, which relate to the economic, industrial, and legal settings and are outside of a bank's control, are factors that influence bank performance [18]. It includes elements like GDP, the rate of inflation, the interest rate, and the currency rate [2, 12]. However, the sole macroeconomic variable included in this analysis is inflation.

(i). Inflation

The yearly country inflation rate is one way to quantify inflation, which is one of the macroeconomic determinants and used to depict changes in the overall price level or inflationary circumstances in the economy [9]. It displays the upward trend in the average level of prices for goods and services. Additionally, it exhibits a currency's purchasing power [34]. Because the effects of inflation are not fairly dispersed across the economy, some people may incur hidden expenses as a result of the decline in the purchasing power of money, while others may benefit. Today, the majority of economists support a low and consistent inflation rate. By allowing the labor market to respond more rapidly during a downturn and lowering the chance that a liquidity trap will prevent monetary policy from stabilizing the economy, low inflation (as opposed to zero or negative inflation) lessens the severity of economic downturns. The duty of maintaining a low and stable inflation rate is typically delegated to monetary authorities.

(ii). Gross Domestic Product

The value of the final goods and services produced by a nation over a certain time period is often measured using the

gross domestic product (GDP) (OECD, 2009). Economic growth is typically gauged by changes in the volume of what is known as real GDP. It illustrates how fluctuations in GDP brought on by inflation are eliminated. The GDP figures are taken from NBE annual reports for various years. According to [18], the profitability of the bank is positively impacted by an increase in the real GDP. However, Ndugbu, M. O., & Okere, P. A. [27] observed that the impact of GDP and inflation on the financial performance of commercial banks was negative and statistically negligible.

2.3.3. Bank Specific Variables

(i). Capital Adequacy

The amount of capital that banks must have in order to be able to resist risks including credit, market, and operational risks they are exposed to in order to absorb potential losses and safeguard the bank's debtors is known as capital adequacy. The capital adequacy ratio demonstrates the bank's internal resilience to losses during a crisis. The bank's resistance to crises is directly correlated with its capital adequacy ratio. By influencing the development of banks into riskier but lucrative initiatives or regions, it also has a direct impact on the profitability of banks. The equity to total asset ratio serves as a proxy for capital adequacy. It's a crucial ratio for figuring out capital strength [6, 17].

(ii). Credit Risk

The danger of losing money if a debtor fails to make payments on a loan or other line of credit (either the principal, interest (coupon), or both). Credit risk is sometimes referred to as counterparty risk. Additionally, credit risk is most simply described as the possibility that a counterparty or loan borrower would fail to fulfill their commitments in accordance with the terms that were agreed upon. The main source of income for banks is the generation of credit. But both the lender and the borrower run significant risks by engaging in this transaction. The smooth operation of the bank's operations might be seriously jeopardized by the danger of a trade partner not carrying out their commitment as per the contract on the due date or at any time subsequently. In contrast, a bank with a high credit risk also has a high bankruptcy risk, which endangers the depositors. Banks have a tendency to take unnecessary risks in an effort to survive and maintain a sufficient profit level in this extremely competitive environment. However, the rising trend toward more risk-taking has led to the insolvency and failure of a significant number of institutions [20].

2.4. Empirical Review

2.4.1. Outside Ethiopia

Punita, J. and Somaiya, D. [30] looked into how India's monetary policies affected banks' profits from 1995 to 2000. Bank rate, lending rate, legal reserve ratio, and statutory ratio were the monetary variables that each separately regressed on bank profitability. According to research, the loan rate has a favorable and significant impact on banks' profitability, hence a decrease in lending rates will hurt those institutions' bottom

lines. Additionally, it was shown that the statutory and legal reserve ratios for banks had a negative impact on their profitability.

Almaqtari, F. A. et al. [6] looked at the macroeconomic and bank-specific factors that affect the profitability of Indian commercial banks. 69 commercial banks' annual data from 2008 to 2017 were included in the study. The dependent variables in the study were ROA, ROE, and NIM, and both a linear regression model and a generalized mixed model (GMM) approach were used to analyze the relationship between bank-specific factors (such as bank size, assets quality, capital adequacy, liquidity, operating efficiency, deposits, leverage, assets management, and the number of branches) and macroeconomic determinants (GDP, inflation rate, interest rate, and exchange rate). The study's findings indicate that, with the exception of the number of branches, all bank-specific criteria had a substantial impact on profitability as evaluated by NIM. The results also demonstrate that all macroeconomic factors considered in the study are important and have a detrimental effect on the profitability of Indian commercial banks.

Udeh, S. N. [38] used time-series data, the Pearson Product Moment Correlation technique to analyze the data, and the t-test statistic to test the hypotheses to examine the impact of monetary policy instruments on the profitability of commercial banks in Nigeria: a case of Zenith Bank Plc for the years 2005–2012. According to the analysis, Zenith Bank Plc's profitability is not significantly impacted by the legal reserve ratio.

Ndugbu, M. O., & Okere, P. A. [27] used OLS and co-integration to examine the impact of monetary policy on the financial performance of DMB in Nigeria from 1993 to 2013. Out of bank deposit rate, bank lending rate, legal reserve ratio, and liquidity ratio, the study's findings indicate that only bank deposit rate has a substantial impact through an inverse link.

Raza, S. A. et al. [31] used panel data from 18 institutions from 2001 to 2010 to examine the profitability of the banking sector in Pakistan. Bank size in terms of assets, credit risk in terms of loan loss provisions to total loans, liquidity in terms of loans to total assets ratio, taxation, capitalization of banks, nontraditional activity of banks, development of the banking industry, development of the stock market, and inflation are taken as independent variables. Bank profitability was taken as a dependent variable. The findings indicated a negative and substantial relationship between profitability and bank size, credit risk, liquidity, taxation, and non-traditional activity.

A study [8] conducted on the liquidity risk and financial performance of the Pakistani banking system from 2004 to 2009 revealed that an 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 its reliance on the repo market, thus reducing the cost associated with overnight borrowing. According to the report, a bank should have enough legally required reserves to reduce liquidity risk. [39] who looked studied the connection between bank profitability and reserve requirements in the Nigerian economy from 1980

to 2006. Since LRR has a beneficial impact on banking earnings, the study discovered a positive relationship between reserve requirements and banks' profitability.

2.4.2. Inside Ethiopia

Feleke, L. [17] used fixed effect panel regression analysis and descriptive statistics to investigate the impact of bank regulation on the financial performance of commercial banks in Ethiopia between 2010 and 2019. In the study, the dependent variable was return on asset, while the independent variables were capital adequacy requirement, minimum paid-up capital requirement, liquidity requirement, statutory reserve requirement, legal reserve requirement, branch expansion requirement, bank size, deposit interest rate, inflation, and GDP. The analysis's findings showed that minimum paid-up capital requirements, liquidity requirements, legal reserve requirements, inflation, and GDP have positive and statistically significant effects on banks' profitability, while capital adequacy requirements and deposit interest have a negative impact.

Dembel, B. [13] used an explanatory research methodology, a quantitative research approach, and a random effect GLS regression model to investigate the variables influencing the performance of commercial banks in Ethiopia from 2010 to 2018. According to the study's findings, management competency, asset quality, and earning quality have a big impact on how well banks function as evaluated by ROA. Age of the banks, capital adequacy, and GDP have no bearing on ROA, and the efficiency ratio of the banks' performance is unaffected by capital adequacy, management ability, or GDP. The results show that management skill and earning quality have a beneficial impact on banks' performance.

From 2008 to 2017, [16] examined how bank rules affected the profitability and liquidity of private commercial banks in Ethiopia. In contrast to the equity investment, legal reserve need, capital requirement, capital adequacy, management efficiency, and BP as independent variables, the ROE and CR were employed to quantify profitability and liquidity, respectively. The study's findings indicate that CAR, management effectiveness, and MCR are detrimental to the profitability of private commercial banks. However, the LRR, BP, and equity investment have a favorable impact on the bank's liquidity. Only LRR, out of these 3 variables, has a positive and significant impact on liquidity, whereas capital adequacy and have a negative impact.

Tekalegn K. [35] used the liquidity requirement, legal reserve requirement, capital requirement ratio, capital adequacy, and lending rate as independent variables and ROE as the dependent variable to examine the impact of the NBE's prudential regulations on the financial performance of private commercial banks. A balanced fixed effect panel regression model was used in the study to analyze data from 10 private commercial banks between 2009 and 2018. The results of panel data regression analysis revealed that although lending interest rate and liquidity requirement ratio have positive and statistically significant effects on bank profitability, capital adequacy ratio and bank size have negative and statistically

negligible effects.

Using capital adequacy, bank size, bill purchases, net interest margins, and loan growth as independent variables, [4] evaluated how the NBE bill affected the performance of commercial banks. Return on asset and bank liquidity were used as the dependent variables. The outcome indicated that, through lowering interest income, the acquisition of NBE bills had a negative and considerable influence on the profitability of the analyzed private commercial banks. Similar to this, buying NBE bills had a negative and significant effect on the analyzed commercial banks' liquidity by decreasing the bank's liquid assets. After the Bill's requirements, private commercial banks' liquidity dropped. Thus, practically all performance metrics of the commercial banks under study have been negatively impacted by the mandate on the acquisition of NBE bills.

Anagaw, A. [7] used 11 years of data from seven chosen institutions to analyze how bank regulation affected the profitability of private commercial banks in Ethiopia. The return on assets was the dependent variable used to calculate the profitability of banks. While capital requirements, legal reserve requirements, and equity investments were employed as stand-ins for bank rules. According to the study's findings, capital requirements and bank size significantly and positively affect the profitability of a subset of banks, whereas capital adequacy and reserve requirements have the opposite effect. The profitability of the tested commercial banks was shown to be negatively but not significantly impacted by the equity investment.

Nahom, D. [26] investigated the factors that affect the performance of private commercial banks in Ethiopia by dividing independent variables into macroeconomic and bank-specific categories (real GDP growth rate, annual inflation rate, internal rate, and NBE bill purchase) and using ROE and NIM as dependent variables. The study's findings indicate that capital adequacy and the acquisition of NBE bills are the two main factors influencing bank performance. Furthermore, the key factors of banks' performance as assessed by net interest margin include liquidity, RGDP growth rate, annual inflation rate, and NBE bill.

Using panel data from 2004 to 2013, [21] investigated the effect of National Bank regulation on the performance of private commercial banks. The study included ROA and NIM as dependent factors and employed the NBE bill purchase requirement, credit cap, and reserve requirement as independent variables. The study's findings indicate that both return on asset and NIM are negatively and statistically significantly impacted by NBE Bill and credit cap. However, the reserve requirement has a detrimental and negligible effect on ROA.

Shibiru, A. [33] used NBE bill purchase directions to analyze how regulatory policy would affect the growth of private commercial banks in Ethiopia. According to the study's findings, the NBE's bill purchase order has a negative impact on practically all private commercial banks' financial results because it raises their costs. The private commercial banks' reserve, capital, and liquidity are all impacted by this

directive. The private commercial bank's asset size is unaffected by the order in a substantial way.

3. Methodology

The study used balanced panel data to conduct a regression analysis in accordance with the empirical literature on the impact of bank regulations on the financial performance of commercial banks. It also used a quantitative research approach and an explanatory research design.

Only nine commercial banks in Ethiopia collectively accounted for 65.4% of Ethiopia's banking industry capital share, according to the National Bank of Ethiopia's 2020/21 annual report. Nine Ethiopian commercial banks were used as a sample in this study. The study used a purposive sampling strategy because the sample's subjects were homogeneous. Moreover, the study comprised 99 observations in order to generate a sample from the population and achieve the study's goal.

3.1. Data Source

The study made use of quantitative data, including annual bank-specific, macroeconomic, and regulatory data for the years 2011 through 2021. Secondary data was gathered for the study from the annual reports of the National Bank of Ethiopia and the audited financial statements (financial performances and financial position) of each participating commercial bank.

3.2. Model Specification

The researcher used a panel linear regression model and estimated it as follows to test the effect of bank regulation on the performance of Ethiopian commercial banks:

$$ROA = \alpha + \beta_1 SRR_{bt} + \beta_2 LRR_{bt} + \beta_3 MCR_{bt} + \beta_4 CR_{riskbt} + \beta_5 CAR_{bt} + \beta_6 GDP_{bt} + \beta_7 INF_{bt} + \varepsilon$$

Where: -ROA= return on asset

SRR = Statutory reserve requirement

LRR = Legal reserve requirement

MCR = Minimum capital requirement

CAR = Capital adequacy ratio

CR = Credit risk

GDP = real GDP

INF = Inflation rate

α = Constant

$\beta = 1, 2, 3 \dots 7$ are parameters to be estimate

4. Result and Discussion

The regression findings that look at how Ethiopian commercial banks perform in relation to bank rules are presented in this section. The study evaluated the model defining criteria to determine the best methodology. the operational panel regression model applied to ascertain the statistically significant influence of banking rules on the performance of Ethiopian commercial banks;

$$ROA_{it} = \alpha + \beta_1 SRR_{bt} + \beta_2 LRR_{bt} + \beta_3 MCR_{bt} + \beta_4 CR_{bt} + \beta_5 CAR_{bt} + \beta_6 GDP_{bt} + \beta_7 INF_{bt} + \varepsilon$$

The results of a fixed effect regression model that looks at how explanatory variables affect the performance of commercial banks are shown in Table 1 below. As a result,

return on asset is an explained variable while credit risk, inflation, minimum capital requirements, and statutory reserve requirements are explanatory factors. Below are the outcomes of a fixed effect regression model analysis performed using the EViews-10 program.

Table 1. Regression Result.

Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 11/05/22 Time: 21: 49				
Sample: 2011 2021				
Periods included: 11				
Cross-sections included: 9				
Total panel (balanced) observations: 99				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
SRR	0.011373	0.008316	1.367551	0.1751
LRR	0.096242	0.040139	2.397679	0.0187**
MCR	-0.004092	0.001753	-2.334444	0.0220**
CAR	0.094133	0.018053	5.214265	0.0000***
CR	-0.030684	0.011993	-2.558447	0.0123**
GDP	0.030084	0.030090	0.999790	0.3203
INF	0.035960	0.008431	4.265029	0.0001***
C	0.041529	0.015907	2.610765	0.0107
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.640104	Mean dependent var		0.025335
Adjusted R-squared	0.575063	S. D. dependent var		0.006166
S. E. of regression	0.004019	Akaike info criterion		-8.048488
Sum squared resid	0.001341	Schwarz criterion		-7.629075
Log likelihood	414.4002	Hannan-Quinn criter.		-7.878793
F-statistic	9.841484	Durbin-Watson stat		2.055904
Prob (F-statistic)	0.000000			

Source; EViews 10

***, ** and * represent significance at 1%, 5% and 10% significance levels respectively.

In the aforementioned Table 1, the fixed effect panel data regression results show that the coefficient intercept () is 0.041529, which denotes that when all explanatory variables took values of zero, the average return on assets would take 0.041529, demonstrating that, when all other independent variables are held constant, an increase of one unit in an independent variable will result in a 0.041529 increase in return on assets. In addition, the minimum capital requirement, capital adequacy, statutory reserve requirement, and legal reserve requirement each account for 57.5% of the variation in return on assets.

4.1. Statutory Reserve Requirement and Financial Performance

According to the fixed effect regression model's findings in Table 1, the statutory reserve requirement (SRR), which is determined by the proportion of reserves with NBE to total assets, has a favorable influence on return on assets and is statistically insignificant even at the 10% level of significance. With all other independent variables held constant, the coefficient of 0.011173 showed that a change of 1% in the statutory reserve requirement ratio results in a change of 0.011173 units in the return on assets of Ethiopian commercial banks.

This is because, in accordance with Directive No.

SBB/55/2013, the NBE only revised the reserve requirement twice: once in 2013 and again in 2016. The second is NBE Directive No. SBB/80/2021, which determined to increase the reserve requirement from its present level of 5% to 10% as of September 1st, 2021. Additionally, the commercial banks included in the sample are those that make up the majority of the nation's banking sector's capital. As a result, they are less concerned about the amount held in reserve with NBE because it ensures the smooth operation of the sector. The statutory reserve requirement helped the return on assets of commercial banks in Ethiopia, although it wasn't a major impact, according to the same outcome as what [17] found.

4.2. Legal Reserve Requirement and Financial Performance

The association between the return on assets of commercial banks and the legal reserve requirement, as measured by the legal reserve to total assets, has a coefficient of 0.096242 and a p-value of 0.0187. This can be taken to mean maintaining the status quo; if the LRR rises by 1%, ROA will rise by 9.6242%. LRR has a positive and statistically significant impact on ROA at the 5% level of significance as well.

Overall, the benefits of both statutory and legal reserve requirements demonstrate that reserve requirement laws increase banking sectors' liquidity while safeguarding

depositors from unforeseen risks. As a result, commercial banks in Ethiopia perform better financially. The legal reserve requirement has a favourable and considerable impact on how financially successful commercial banks are. This finding is consistent with what was discovered in [17, 21].

4.3. Minimum Requirement and Financial Performance

The results showed a coefficient of -0.004092 with a p-value of 0.0220, which can be translated as keeping other things constant, if MCR increases by 1%, ROA decreases by 0.4092%. This effect of the minimum paid-up capital requirement was identified by the natural log of the total paid-up capital amount. This demonstrates that MCR significantly and negatively affects the efficiency of commercial banks. This happens when money that was supposed to be lent out to generate interest income is instead used as capital, depriving commercial banks of income. The outcome is consistent with the research by [37, 29].

4.4. Capital Adequacy Ratio and Financial Performances

The capital adequacy ratio (CAR), which is determined by the equity to total assets ratio, has a coefficient of 0.094133 and a p-value of 0.0000, which can be translated as keeping other factors constant if CAR increases by 1% and ROA increases by 9.4133%. As a result, the CAR is positively correlated with ROA and statistically significant at 10%. This suggests that banks with more capital may be able to grow their operations by enhancing their ability to manage risk and improve their profitability [15]. The protection, assurance, and promotion of the financial system's efficiency are all considered as possible with capital. It also reveals whether a business has sufficient capital to cover losses brought on by unforeseen circumstances [19]. This outcome is consistent with what was predicted and what was discovered in [5, 23, 36]: capital sufficiency is positively and strongly correlated with banks' financial performance.

4.5. Credit Risk and Financial Performance

The ratio of provision for loss on loans and advances to the total loans and advances, which is used to calculate the coefficient of credit risk (CR), has an estimated value of -0.030684 and a p-value of 0.0123. This outcome is seen as holding other factors constant: if credit risk rises by 1%, ROA will fall by 3.0684 percent. This illustrates how negatively and significantly credit risk affects the performance of Ethiopian commercial banks. This result is consistent with that of [1, 22].

4.6. Inflation and Financial Performance

The average annual rate of inflation, used as a proxy for inflation (INF), showed a coefficient of 0.03596 with a p-value of 0.0001. It is understood to mean maintaining other factors constant; if inflation rises by 1%, commercial banks' returns on assets rise by 3.596%. As a result, the inflation rate (INF) has a favorable and considerable effect on the performance of commercial banks since a higher inflation rate stimulates families to replace their cash balances with

purchased transaction services, so strengthening the financial sector. Inflation may therefore benefit the growth of the financial sector. This result is consistent with that of [23, 1, 3, 19]. All of these studies concluded that an increase in inflation will result in an improvement in bank performance up to and including the point at which it results in a decline in financial development.

5. Conclusion and Recommendations

The study's objective was to determine the relationship between bank regulations and firm performance commercial banks undertaking in Ethiopia. Return on asset, which gauges how well commercial banks are performing, was taken as a dependent variable. The study used credit risk, real GDP, inflation, minimum capital requirements, capital adequacy ratios, statutory reserve requirements, and legal reserve requirements as explanatory variables. According to the study's hypothesis, macroeconomic, bank-specific, and regulatory factors all have a major impact on how well commercial banks function in Ethiopia. The statutory reserve requirement ratio affects commercial banks' return on assets in a favorable and negligible way. This finding suggests that improved financial performance for Ethiopian commercial banks is a result of the absence of periodic changes in the NBE's statutory reserve requirement ratio and the capital strength of the banks under study. The outcome demonstrates that, at the 5% level of significance, the legislative reserve requirement had a favorable and significant impact on the return on assets of commercial banks in Ethiopia. This finding suggests that the NBE's proposed legal reserve requirement legislation will improve the soundness and health of the banking industry by encouraging healthy competition among Ethiopia's commercial banks.

The natural log of the total paid-up capital amount, which serves as the minimum paid-up capital requirement, has a negative and considerable influence on the return on assets of Ethiopian commercial banks. This finding suggests that money intended for lending out to make interest income is instead used for capital, depriving commercial banks of income and contributing to the fall in performance of Ethiopian commercial banks. The return on assets and the capital adequacy ratio were shown to be positively associated and statistically significant at 10%. This suggests that banks with sufficient capital have the capacity to grow their commercial operations because such capital acts as a tool to safeguard, ensure, and advance the stability and effectiveness of the financial system. Commercial banks' profitability is subsequently increased as a result. The outcome of the regression analysis showed that real GDP growth rate, a proxy for GDP, had a favorable but negligible impact on commercial banks' return on assets. The performance of commercial banks in Ethiopia is positively and statistically significantly impacted by the average annual inflation rate, which serves as a proxy for inflation. As a result of adjusting their lending rates in reaction to fluctuations in inflation, Ethiopian commercial banks appear to be following an anticipatory

trend.

In light of the aforementioned finding, the study recommended that (1) NBE should take into account the impact its Directive No. SBB/80/2021, that raise RR from 5% to 10% as such a significant policy adjustment that could increase the cost of intermediation, especially for newly emerging banks, as it creates a significant burden on serving their customers, which in turn negatively affects the performance of banks and that of the country's overall economy; (2) the NBE needs to adhere to and update the legal reserve requirement in order to improve liquidity as well as to safeguard clients' interests and the country's commercial banks' ability to make money. Therefore, it is preferable for policymakers to either determine a minimum percentage of interest on the conserved capital or grant authority to invest in more lucrative types of portfolios in order to boost those institutions' financial performance; (3) commercial banks should increase equity progress in order to increase capital growth. To do this, the dividend payout ratio should be decreased while the retention ratio is raised. In order to increase shareholder return, increasing leverage should not be prioritized over boosting the return on asset; (4) commercial banks should thoroughly assess each borrower's creditworthiness before disbursing cash while obtaining suitable collateral with sufficient monetary value. This will increase profitability as the bank will not only acquire the agreed-upon collateral but also benefit from its sale, reducing the need for loan loss provisions. Last but not least, commercial banks in Ethiopia should consider both the deposit interest rate and the sensitivity of their customers to changes in interest rates when altering their lending rates. By charging a reasonable interest rate that is appropriately adjusted for both inflation and the deposit interest rate, they should concentrate on improving their profitability. The NBE and other regulatory bodies should strike a compromise between the necessity to preserve the banking sector's financial performance and their goal to curb the trend of growing inflation.

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