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THE EFFECT OF CREDIT RISK ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS: EVIDENCE FROM SELECTED PRIVATE COMMERCIAL BANKS IN ETHIOPIA

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Abstract
This study has examined the relationship between the credit risk and bank profitability. It was based on Secondary data that were collected from audited financial statements of seven randomly selected private Ethiopian commercial banks covering the period 2011-2020. The data analysis employed descriptive statistics, correlation analysis and econometrics regressions using STATA software package. Credit risk has been measured using nonperforming loan, loan loss provisions and capital adequacy whereas return on equity was a proxy of bank performance and bank size was used as a control variable. The results revealed that capital adequacy and nonperforming loan have negative significant effect while loan loss provision has positive significant effect on bank profitability. Eventually, the investigation suggested that it is essential for private commercial banks to develop and implement stringent credit administration strategies to remain healthy in financial condition and maintain stability.

Key Words: Bank, Profitability, Credit Risk, Loan.

Introduction

Ethiopian private commercial banks profoundly assess credit risk through examining bank profitability and their financial robustness significantly depends on accurate credit risk measurement and the quality of credit risk management system they employed. Commercial banks are thus keen to identify, evaluate, measure and monitor credit risk that has adverse effect of triggering their financial performance (Bhattarai, 2016).

Olugboyega et al.(2018) for any commercial banks around world, having stringent Credit administration policy can serve as risk minimization tool that come due to non-performance loan. As a result, the banking industry credit creation process strategy needs to incorporate appropriate risk mitigating follow up mechanisms that can ensure the financial soundness and sustainable operation of the sector.

Kodithuwakku (2015) commercial banks undertake numerous activities for their sustainability and the king of all these activities is the credit from which the banking sector can gain income. The fact is that it constitutes the lion's share of bank revenue in the form of credit interest. However, this is always with the subsequent inherent credit risk (for any default probability) that forced to downturn financial performance of commercial banks in particular and the entire economy as a whole.

Credit risk is the present or future risk to bank earnings that can be occurred as the obligator fails to settle the contract as per the agreement. Credit risk is the major challenge and the ability to tackle the problem requires commercial bank's financial stability (Mekuria, 2017; Rundassa, 2019).

Number of borrowers and amount of credit extension has dramatically been grown, which resulted the need to set sound credit risk control systems. The aim of credit risk management system is to increase

risk-adjusted rate of return by reducing risk exposures within acceptable parameters (Ahmadyan, 2018).

Statement of the problem

In Ethiopia, commercial banks encounter numerous difficulties though there are regulations imposed by the Central Bank of the country. Credit risk is the most serious of all several problems having high potential for bank's financial performance to hinder in the course of their business (Mekuria, 2017 & Rundassa, 2019).

Banks retain large deposit and offer huge loan granting to borrowers experiencing defaults leading the commercial banks to have large amount of loan loss provision to cover that default. The higher loan loss provision, which is portion of the bank's profit, the higher the risk causing the financial profitability of the private commercial banks to trigger during that fiscal year. Typically, the more a particular loan is at default the more probability the commercial banks at risk (Bizuayehu, 2015).

Researchers such as (Abera, 2018; Mihretu, 2019) have been conducted their study on the same topic of interest. They focused on the relationship between credit risk and financial performance of Ethiopian private commercial banks using the data adopted (2003-2016). The authors argued that interest is the main source of revenue and efficiently manage credit risk helps to ensure Ethiopian private commercial banks to remain healthy in the banking industry. However, they are not comprehensive regarding risk exposure of large customer loan disbursement that requires investigation. Accordingly, the purpose of conducting the current study is to examine to what extent extensive credit creation worsens credit risk that in turn has an adverse effect on financial performance of private commercial banks in Ethiopia.

Objectives of the study

The general objective of this study is to explore the effect of credit risk on the financial performance of private Ethiopian commercial banks covering the period (2011-2020).The following are the specific objectives of this study.

1. To evaluate the effect of nonperforming loan on performance of private commercial banks in Ethiopia.
2. To explore financial effect of loan loss provision on performance of private Ethiopian commercial banks
3. To evaluate the effect of capital adequacy on commercial banks' financial performance

Significance of the study

This investigation helps the private commercial banks to develop a framework for measuring and evaluating credit risk of banks to remain healthy in financial condition. Enable management to devise stringent credit risk management strategies and policies. This paper also contributes to the literature on the effect of credit risk on private commercial bank's profitability by being focused on large customer loan disbursements and its subsequent effect. Likewise, by paying more attention on credit risk measures that can longer harm commercial banks performance, this study has made invaluable contribution to commercial banks that can be established after 2020.

Literature review

Financial success and stability of commercial banks relied on the possession of sound credit risk control. As a result, it is essential for commercial banks to identify measure, monitor and evaluate risk (Bhattrari, 2016).

Credit risk management in banking core business activity begins with stringent credit policy framework that can efficiently control risk. Accordingly, for banking industry to longer existence and expand managing credit risk is given great emphasis since larger credit risk is resulted from customer default (Ayalew, 2018).

According to Ozurumba (2016) Loan and advances the bank granted to counterparties are regarded as risky assets. This is because they belong to depositors and risk arises where there is a failure on behalf of the borrowers, leading to low bank liquidity as monies available in bank may not be enough to cover withdrawal demand of depositors. As a result, the success or failure of this core banking activity is dependent on the subject matter of risk and uncertainty.

Ayalew and Kegninkeu (2018) the economic as well as social wellbeing of any nation is relied on the financial service institution. In this regard, the banking industry takes the lions' share through allocation and mobilization of economic resources of a country by which funds are transferred from surplus units to fund deficit units for investment. According to them, although there have been a serious financial threat due to customers delay or nonpayment of interest and principal as they due, still the economic condition of once country can be easily revealed under a summarized annual report of commercial bank's performance.

As credit has a direct effects on the financial performance of the banking sector, it is imperative for commercial banks to develop forecasting abilities regarding risk limit gross loan portfolio to diversify risk and make stringent loan extension analysis concerning to customer repayments or non-repayment of their obligation (Kodithuwakku, 2015).

Kagoyire (2016) the primarily condition for sound credit risk management is the ability to wisely and efficiently manage borrowers credit lines. The lenders are to focus on the counterparty's credit history, repayment capacity and willingness in order to reduce exposure to nonperforming loans and over reserves. Credit risk management practice begins with loan extension and continues until the loan is fully repaid back. It follows that good lending principle to the large extent is concerned with assuring the customer's ability to make full payments as per the agreements. However, if this is not put in to place the profit from the interest earned come to being reduced or might be used to cover loan loss provisions when customers get in to default. The fundamental purpose of credit risk management is to protect lenders from getting in to financial hardship through managing financial debts and optimizing operational cash flows. To attain this, desired goal need to be supported by policies and procedures helpful to keep quality of the loan.

Uwuigbe et al (2015) people may come across what is known as credit appraisal. Loan appraisal basically mean that assessing a particular loan application or proposal in a thorough manner in order to gauge the repayment ability of credit applicant. Accordingly, lenders conduct loan appraisal chiefly to make sure that the bank gets back the money that it grants to its counterparties. Whether one applies individually or as a corporate entity, a lender always conducts a detailed and systematic credit appraisal process.

Ayalew and Assfaw (2018) the credit appraisal process before giving a loan to entities is comprehensive in nature as it appraises or evaluates management, market, technical, and financial elements. No lender approves and sanctions anybody's personal loan application instantly without an evaluation. It is absolutely important for a lender to carry out a credit appraisal process in order to ensure that the borrower has the capacity to repay the entire loan amount on time without missing any payment deadlines. This is very crucial for a bank as this determines the interest income and the capital of the bank.

The repayment behavior of a borrower directly affects the performance of the bank. Both banks and non-banking financial institutions utilize credit appraisal procedures before approving a personal loan application or any other loan application. Each lender has its own techniques for performing credit appraisal processes. A lender needs certain norms, rules, and standards to assess the creditworthiness of a particular loan applicant. If a borrower has a high creditworthiness, there is high probability to accept his or her loan application by the bank. A credit appraisal is done to avoid the risk of default on loans (Bizuayehu, 2015).

Summary of literature gap

Investigators such as (Abrha, 2019; Seid, 2016; Miheretu & Dinku, 2018) have conducted study to analyze the relationship between credit risk and financial performance of commercial banks. In this regard, researchers emphasized on bank specific, industry specific and macroeconomic factors to make analysis with little concern as to whether providing heavy loans to customers can have adverse effect on profitability. However, to the knowledge of pervious literature review, still investigation is needed to disclose whether granting excessive loan to customers outraises credit risk that subsequently affects financial performance of private commercial banks in Ethiopia. This study, therefore, strives to examine to what extent excessive credit creation aggravates credit risk that in turn influence private commercial bank's profitability.

Methodology

The study included seven randomly selected Ethiopian private commercial banks. Secondary data were collected from audited financial statements; a quantitative approach and explanatory research design were used in the study. Data were analyzed using descriptive statistics and regressions.

Study Variables

Independent Variables

These variables have explanatory power of the explained variables in the study.

Loan Provision to Total Asset Ratio (LPTAR): The ratio can be expressed as:

$$\text{LPTAR} = \frac{\text{Loan loss provision}}{\text{Total Asset}}$$

Capital Adequacy ratio (CAR): The amount of capital that the bank should have to absorb unexpected future loss. It can also protect depositors. The ratio can be expressed as:

$$\text{CAR} = \frac{\text{Total Equity}}{\text{Total Risk Weighted Assets}}$$

Nonperforming Loan: A nonperforming loan (NPL) is a loan in which the borrower has not made required repayments of principal and interest for the last 90 days. The ratio can be expressed as:

$$\text{NPLGLR} = \frac{\text{Nonperforming Loan}}{\text{Gross Loan}}$$

Control Variable

Bank Size: Measures the total asset of the bank during the study period and natural log of total bank asset is its proxy.

$$\text{BS} = \text{Log(TA)}$$

Dependent Variable:

Bank's performance is measured in terms of Return on Equity.

Return on Equity (ROE): It represents the proportion of banks net profit to equity

$$\text{ROE} = \frac{\text{Net profit}}{\text{Total Equity}}$$

Model

$$\text{ROE} = \alpha + \beta_1 \text{CAR} + \beta_2 \text{NPGLR} + \beta_3 \text{LPTAR} + \beta_4 \text{BS}_{\text{Control}} + \varepsilon_i$$

Where; α = the constant term

β = the coefficient of explanatory variables

LPTAR=loan provision to total asset ratio

CAR = Capital adequacy ratio

NPLGLR = nonperforming loan to gross loan

BS = Natural logarithm of total asset

ε_i = disturbance term

Empirical findings: The descriptive analysis

Variables	Obs.	Mean	Std. Dev.	Min	Max
ROE	65	.2020692	.048468	.1235	.323
CAR	65	.1579554	.0555438	.09	.4016
NPLR	65	.0268954	.0266475	0	.21
LPTAR	65	.0083554	.0030102	.0014	.016

(Source: C*omputation through STATA Software*)

Return on Equity (ROE) calculation measures how efficiently the commercial banks are generating income from equity investments of their stockholders. As analyzed in the above table, return on equity (ROE) proxy of bank performance ranges from 12.35% to 32.3% where the standard deviation was 4.85%. The smallest standard deviation from the mean was advisable and acceptable. In this case, the standard deviation value 4.85% was lowest relative to mean value of return on equity (ROE) was 20.21% and this revealed those commercials were operating very efficiently.

Capital Adequacy Ratio (CAR) is a measure of how much capital the bank has available reported as a percentage of bank's risk-weighted credit exposures. The purpose is to establish that banks have enough capital reserve to handle certain amount of losses, before being at risk of becoming insolvent.

Its standard deviation 5.55% was the lowest comparing to the mean value of 15.79% which was greater than almost by two fold of what has been legally required 8%. This situation indicated that during the study period commercial banks' were financially strong enough to withstand any unforeseen losses and financial downturn.

Nonperforming loan to gross loan ratio (NPL) Nonperforming loan represents sum of borrowed money whose scheduled payments have not been made by the debtor over relevant range of time.

According to the descriptive analysis, the mean and standard deviation values were 2.68% and 2.66% respectively. The very close distance between these values showed that variation is too little. This implied that low quality of loan and poor credit administration policy during the study period. Therefore, commercial banks are required to be hard working in terms of revising loan management policy and improving loan quality to mitigate loan default thereby boosting their profitability.

Loan loss Provision to Total Asset Ratio (LPTAR): It is the money set aside to cover loan losses. From descriptive statistics of the selected commercial banks above, the author got 1.4% minimum statistical value whereas 1.6% was the maximum value. It had standard deviation 0.3% with the mean value of 0.84% indicated that commercial banks were well protected against future losses and still are able to provide services to other borrowers and depositors.

Correlation Analysis

Correlation analysis in research is statistical method used to measure the strength of relationship between two variables and compute their association. More specifically, correlation analysis indicates the direction movement of the variables of the study. In this case, the higher correlation the strong relationship between the two variables, while the lower correlation the poor correlation between the two variables. The following shows the relationship between the variables of the study.

	roe	car	nplr	lptar	bs
roe	1.0000				
car	-0.4449	1.0000			
nplr	-0.1571	-0.0725	1.0000		
lptar	0.4744	-0.0622	0.0295	1.0000	
bs	-0.4698	-0.2747	0.0740	-0.4766	1.0000

(Source: Computation using STATA software)

Based on the results, capital adequacy Ratio (CAR) and Nonperforming loan Ratio (NPLR) are inversely correlated with the performance measure return on equity (ROE) implying that as the values of such variables increased the slope of financial performance measures tend to go downward and vice versa. Conversely, loan loss provision to total asset ratio (LPTAR) and return on equity(ROE) are positively correlated in that the slope of financial performance and loan loss provision tend to go in the same direction. As the private commercial banks set aside loan loss provisions their profitability tends to show an increment tendency.

Normality test

The table below shows Jarque-Bera normality test result of residuals. Since the values are very close to standard values of Skewness and Kurtosis, it is concluded that residuals are approximately normally distributed.

Mean	Std. Dev.	Variance	Skewness	Kurtosis
-1.16e-10	.0295729	.0008746	.0728208	3.03418

Source: banks' data using STATA software

Heteroskedasticity Test

Hetroskedastesity is a systematic pattern in errors where the variances of the errors are not constant. It is being tested using Breusch –Pagan Godfrey (BPG) test for hetroskedastesity as follows:

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of roe

         chi2(1)      =     1.79
         Prob > chi2  =   0.1811
```

The null hypothesis of Breusch-Pagan Godfrey (BPG) is accepted as the *p-value* at 5% significance level is insignificant and there is no hetroskedastesity implying that error variances are constant.

Multicollinearity Test

Multicollinearity is the correlation between independent variables involved the study where the analysis results shown below.

	car	nplr	lptar
car	1.0000		
nplr	-0.0725	1.0000	
lptar	-0.0622	0.0295	1.0000

(Source computation using STATA software)

The table above shows absence of multicollinearity between bank profitability and credit risk measures since the correlation between them is below 80%.

Omitted Variables Test

Omitted variables test for sample representative private commercial banks in Ethiopia.

```
Ramsey RESET test using powers of the fitted values of roe
       Ho:  model has no omitted variables
                  F(3, 57) =      2.03
                  Prob > F =      0.1199
```

According to the omitted variable test, RAMSY'S null hypothesis is accepted as indicated above, since the p-value is insignificant at 95% confidence interval and 5% significance level. Therefore, the model is free of omitted variables.

Regression Analysis

The econometric regression analysis can show whether there is a significant or insignificant relationship between performance measure return on equity (ROE) and credit risk measures loan loss provision to total asset ratio (LPTAR), nonperforming loan to total loan ratio (NPLR) and Capital

adequacy ratio (CAR). Therefore, regression analysis of this empirical study has been undertaken using STATA 14.0 version software and results were interpreted accordingly:

Source	SS	df	MS	Number of obs	=	65
				F(4, 60)	=	25.29
Model	.094373576	4	.023593394	Prob > F	=	0.0000
Residual	.055971694	60	.000932862	R-squared	=	0.6277
				Adj R-squared	=	0.6029
Total	.15034527	64	.002349145	Root MSE	=	.03054

roe	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
car	-.515232	.0734825	-7.01	0.000	-.6622188	-.3682452
nplr	-.3025663	.1441677	-2.10	0.040	-.5909447	-.0141879
lptar	3.067844	1.484843	2.07	0.043	.0977155	6.037973
bs	-.0537921	.0097481	-5.52	0.000	-.0732912	-.0342929
_cons	.795586	.1073572	7.41	0.000	.5808398	1.010332

Results Discussion

Nonperforming loan to total loan ratio (NPLR): The findings of the regression result revealed that nonperforming loan to total loan ratio (NPLR) has p-value 0.040 which is less than 0.05 at 5% significant level. As a result this factor is statistically significant and that nonperforming loan to total loan ratio (NPLR) has an effect on the financial performance of privately-owned commercial banks in Ethiopia. However, the estimated negative coefficient of nonperforming loan to total loan ratio (NPLR) shows that there exists an inverse relationship with performance measure return on equity. This means that a unit change in nonperforming loan to total loan ratio has a potential to affect bank performance in opposite direction. Typically, a 1 Birr increase in nonperforming loan to total loan ratio will decrease banks profit by 0.3025 Birr holding bank size and all other predictor variables constant. This finding is in line with the literatures (Mulugeta & Seid, 2018; Bizuayehu, 2015) who found a negative significant relationship between nonperforming loan and financial performance of commercial banks.

The loan loss provision to total asset ratio (LPTAR): The result in the above regression analysis shows p-value 0.043, good evidence that loan loss provision has a significant effect on the financial performance of private commercial banks in Ethiopia. A change in one unit in the loan loss provision has an effect on bank financial performance in the same direction. This means that, keeping bank size and all other predictor factors constant, a unit increase in loan loss provision can result in 3.067 Birr increase on bank profitability. The fact here is that, banks provide loan loss provision in advance to cover expected future loss and the more banks' loan loss provision out of the total asset, the less risk of loan loss and the more profitability would likely be, but it is controversial that as loan loss provision increase yielding asset amount and profitability will decline. This finding is consistent with the findings of (Belay 2019; Gizaw et al., 2015) who found a positive significant relationship between loan loss provision and bank profitability.

Capital Adequacy Ratio (CAR):Based on above regression output, Capital Adequacy Ratio (CAR), has a (p-value .000) which was very much less than the standard (p-value .05) implying that capital adequacy ratio (CAR) is statistically significant and there is enough evidence that capital adequacy ratio has an effect on the financial performance of private commercial banks in Ethiopia. In addition, capital adequacy ratio has statistical but negative correlation with bank performance implying that a

one unit change in capital adequacy ratio will have adverse effect on bank profitability. This means when commercial banks keep 1 Birr as capital reserve, keeping bank size and all other explanatory factors constant, their profitability will be reduced by 0.5152 Birr. This is consistent with the findings of (Abera, 2018; Gizawet al., 2015; Bhattarai, 2019) who found out the adverse relationship of capital adequacy with bank performance.

The summary of findings made on the private commercial banking sector identified that credit risk measures were good enough to bring significant effect on commercial bank's profitability. Thus, sound credit administration strategy development is crucial for private commercial banks to remain healthy in the industry and continue their economic support.

Conclusions and recommendations

Based on the findings of the study, there is a significant negative relationship between defaulted loan and performance thus it is recommended that private commercial banks to target their effort towards loan quality and minimize its impact on profitability.

Loan loss provision was concluded as it has a positive significant effect of on performance, therefore, it is better for private commercial banks to hold loan loss reserves to protect themselves against bad loans and promote efficient performance.

It is not advisable for commercial banks to hold large capital reserve rather they are recommended to invest in other less risky and more income generating areas like qualified loan to boost profitability and maintain their stability.

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