



CREDIT RISK MANAGEMENT AND ITS IMPACT ON PROFITABILITY OF COMMERCIAL BANKS IN ETHIOPIA

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ABSTRACT

This paper examines the impact level of credit risk management towards the profitability of commercial banks in Ethiopia in general .It argues that credit risk management has significant impact on profitability of banks of our country. To examine its impact level the researcher uses multiple regression models by taking 10 years ROE (dependent variable),ROA(dependant variable), NPLR,LLPR,LTDR and CAR (independent variables) from each bank and in addition to that questioner also distributed to the authorized bodies in the risk management position of each bank. The researcher took five banks purposively that have ten year and above life span in Ethiopia, those are Commercial bank of Ethiopia, Dashen bank, Awash international bank, Banks of Abyssinia, and Wegagen Bank. Here You have to include a short summary of your conclusion and Recommendation.

Key words: Credit Risk Management, Commercial banks, credit risk, Ethiopia, panel data regression performance, profitability

Introduction

Banks are financial institutions that accept deposit and make loans. Commercial banks in Ethiopia extend credit (loan) to different types of borrower for many different purposes. For most customers, bank credit is the primary source of available debt financing and for banks; good loans are the most profitable assets (Mishikin, 2004, pp 8-9).

Even if Credit creation is the main income generating activity for banks, it also involves huge risks to both the lender and the borrower. The risk of a trading partner not fulfilling his/her obligation as per the contract on due date or anytime thereafter can greatly jeopardize the smooth functioning of a bank's business. On the other hand, a bank with high credit risk has high bankruptcy risk that puts the depositors in jeopardy (danger) that can easily and most likely prompts bank failure.

Credit risk is the most obvious risk in the banking industry and possibly the most important in terms of potential losses. The default of a small number of key customers could generate very large losses and in an extreme case could lead to a bank becoming insolvent. This risk relates to the possibility that loans will not be paid or that investments will deteriorate in quality or go in to default with consequent loss to the bank. Credit risk is not confined to the risk that borrowers are unable to pay; it also includes the risk of payments being delayed, which can also cause problems for the bank (Basel, 1999).

So, In order to protect their own interest and the wealth of bank shareholders/depositors, banks need to investigate and monitor the activities of the will be and existing borrowers. Adequately managing of those risks related with credit is critical for the survival and growth of any financial institutions. In case of banks, the issue of credit risk is of even of greater concern because of the higher level of perceived risk resulting from some of the characteristics of clients and business conditions that they find themselves in.

Statement of the Problem

Currently the banking business is so sensitive because more of their income (revenue) will be generated from credit (loan) given to their customers (Jeoitta Colquitt. 2007). This credit creation process exposes the banks to high credit risk which leads to loss. Without effective credit risk management good bank performance or profit will be unthinkable.

If one knows the impact level of credit risk management on profitability he/she can give a great attention on management of those credit risks, particularly those responsible communities /credit risk management bodies / in banks , lecturers in the universities and colleges ,bank policy makers, like national bank of Ethiopia in the case of ours . When they are aware of about the impact level credit risk management towards profitability, then they are going to take care of their credit decision and search best credit risk management mechanisms which will be good for the business. Credit risk management mechanism like screening and monitoring, long-term

customer relationship, collateral requirements and credit rationing are important for the success of banks by determining its profitability, liquidity, solvency and amount of loan portfolio.

Research Hypothesis

- There is a statistically significant relationship between NPLR and profitability of Ethiopian commercial banks measured by ROA and ROE.
- There is a statistically significant relationship between CAR and profitability of Ethiopian commercial banks measured by ROA and ROE.
- There is a statistically significant relationship between LTDR and profitability of Ethiopian commercial banks measured by ROA and ROE.

Objectives of the Study

General Objective

The purpose of this study was to measure the impact level of credit risk management on profitability's of five commercial banks in Ethiopia.

Specific Objectives

In addition to the above general purpose of the study, the researcher needs to identify the following specific objectives too:

1. How far credit risk affects profitability performance of commercial banks in Ethiopia?
2. Is there a statistically significant relationship between NPLR and profitability of Ethiopian commercial banks measured by ROA and ROE
3. Is there a statistically significant relationship between CAR and profitability of Ethiopian commercial banks measured by ROA and ROE
4. Is there a statistically significant relationship between LTDR and profitability of Ethiopian commercial banks measured by ROA and ROE

Significance of the Study

- This study helps to enrich local literatures on the subject matter. As previously indicated there is a complexity in the findings of different studies so this study enriches the findings revealed by the previous studies. Because there is no detail study were made on

the impact of credit risk management and commercial banks profitability's in Ethiopia. In addition, it also signifies commercial banks of the country to evaluate its credit risk management mechanisms in order to reduce loan loss and be profitable and more liquid than before. Beside to that it adds knowledge for credit risk officials by identifying the impact level of credit risk management towards profitability's of commercial banks of the country. It also makes them well conservative on their credit risk management mechanisms. Not only for credit risk management official of banks, but also adds knowledge for the concerned body. Lastly, the study is useful to further researchers who are interested in this area as a reference.

LITERATURE REVIEW

The researcher summarized previously identified articles in order to know their variables used methodology and objective and tried to formulate his own variables used, methodology and objectives. So, the researcher summarizes below.

Belás Jaroslav found that Transition from the Standardized approach to Foundation (STA) Internal Ratings - Based Approach (FIRB) approach a significant minimization effect is represented and significant savings of bank's equity is brought. Advanced methods for credit risk measurement are more flexible on class change of corporate exposures in portfolio. The main objective of article'' Assessment of Credit Risk Approaches in Relation with Competitiveness Increase of the Banking Sector'' is to asses credit risk approaches in relation with competitiveness increase of the banking sector. The variables used are A correlation of debtor's assets is dependent on the banking portfolio segmentation and exposure categorization and the methodology used is Standardized Approach and Internal Based Approach.

Ejike ,R.D.Ohajianya, D.O.Lemchi J.I.(feb,2013) found that The main objective of article'' Agricultural Credit Risk and Default Management by Banks in Imo State, Nigeria'' is To analyze agricultural credit risks and defaults management by banks in Imo State. Variables used are Supervision, viability, collateral, sanction, appraisal, and insurance. Methodology used is The multi-stage sampling techniques were used to select the sample and the main findings is The related variables; supervision, viability, collateral, sanction, appraisal and insurance are significant credit and default management techniques employed by banks in the study area in their course of lending to agriculture.

(Ladoke Akintola University of Technology, april,2012) found that minimal causation between Deposit Exposure (DE) (Surrogate of credit risk management and performance but greater dependency on operational efficiency parameters. The main objective of article “ANALYSIS OF CREDIT RISK MANAGEMENT EFFICIENCY IN NIGERIA COMMERCIAL BANKING SECTOR,(2004-2009) is to analyze relationship between efficiency of credit risk management and financial health in selected Nigerian banks. The methodology used is Data collections are mainly secondary spanning a six-year period before and after consolidation programmed of the Nigerian banking sector. Collected data were regressed and unit root test was conducted to verify order of integration for each time series data employed. Variables used are Efficiency of Credit Risk Management (ECRM); bank performance and operational effectiveness..

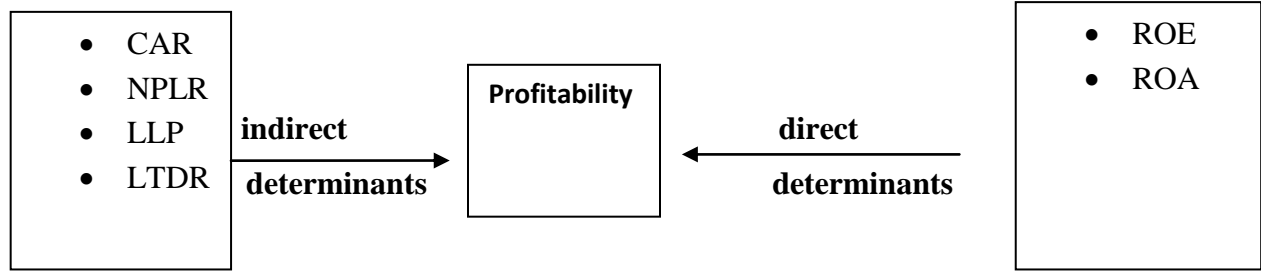
Godbillon-Camus and Christophe Godlewski, December, (2005) found that access to soft information allows the banker to decrease the capital allocation for VAR coverage. The main objective of article “Credit Risk Management in Banks: Hard Information, Soft Information and Manipulation” is To investigate the impact of the information’s type on credit risk management in a principal-agent framework with moral hazard with hidden information. Variables used are Information hard versus combination of hard and Soft information. Methodologies used are Secondary data was used and regression analysis is used.

Million Gizaw, Matewos Kebede and Sujata, (2013) found that credit risk measures non-performing loan, loan loss provisions and capital adequacy have a significant impact on the profitability of commercial banks in Ethiopia The main objective of article “The impact of credit risk on profitability performance of commercial banks in Ethiopia” is To empirically examine the impact of credit risk on profitability of commercial banks in Ethiopia. Variables used are Non-performing loan, loan loss provisions and capital adequacy. Methodologies used are Secondary data collected from 8 sample commercial banks for a 12 year period (2003-2004) were collected from annual reports of respective banks and National Bank of Ethiopia. The data were analyzed using a descriptive statics and panel data regression model.

Conceptual Framework

The conceptual framework indicates the crucial process, which is useful to show the Direction of the study. The study will show the relationship between 6 variables i.e NPLR, LLP, LTDR,

CAR, ROE and ROA with Profitability. The study will how these variables are determined the profitability of commercial banks in Ethiopia.



The rationale for using these variables are some variables can reflect the profitability aspect the remaining variables reflect the credit risk side. So by using these above mentioned variables the researcher can reach a good decision.

Research design

The research is quantitative research. So the researcher used explanatory type of research design because the researcher ultimate goal is to test if the relationship exists and how the credit risk management could impact on profitability of commercial banks The reason why the researcher used this type of design is the researcher makes use of statistical analyses to obtain their findings and to address its research question and to meet its general objectives too. For that the data is collected from five different commercial banks of the country which are Commercial Bank of Ethiopia, Awash international bank, Dashen bank, Wegagen Bank, Abyssinia bank. There are also few questioners which are distributed to credit risk management bodies of each bank in the study.

Data collection Instruments, Variables, and Materials

The researcher will use both primary and secondary data sources. For primary sources questionnaires is distributed to Risk and Compliance Management Officer of the head office, Risk Management Department Officers, loan officers and selected staffs of the head office. For secondary sources 10 year (2005-2014) annual reports of the bank were important data for this study. In addition, data from different documents of the bank officials (like Risk Management reports), Banking proclamations of National Bank of Ethiopia 10 years, manuals, articles, journals, magazines, books, previous research and various internet sites will be used for the proper accomplishment of this study.

The researcher collect the information from primary source like banks follow up system with regard to loan disbursement, involved persons in the ,loan approval process.

The researcher also collected the information from balance sheet and income statement from secondary sources. From this output we obtain information like mean, standard deviation, mean and maximum values computed for the sample Observation of 5 selected commercial banks for 10 years periods.

Model Specification

This study adapted a panel data model previously used by Kolade et al. (2012) in their study of “Credit risk and commercial bank performance of Nigeria”. Kolade et al. (2012) used ROA as a dependent variable in their model, but we used ROA and ROE, the two most common indicators of profitability in two different models. Moreover, we modified the model on the right hand side by adding CAR as explanatory variable. Thus the dependent variables in this study, profitability were measured by rate of return on asset (ROA) and rate of return on equity (ROE). The independent variable, credit risk, was also measured by the ratio of nonperforming loan to total loan and advance ratio (NPLR), loan loss provision ratio (LLPR), capital adequacy ratio (CAR) and loan to deposit ratio (LTDR). To account for unexplained change on profitability performance by credit risk measures used in the model error terms was included in the model.

The models are expressed as follows,

$$\text{Model 1: ROA} = \beta_0 + \beta_1\text{NPLR} + \beta_2\text{CAR} + \beta_3\text{LTDR} + \beta_4\text{LLPR} + e$$

$$\text{Model 2: ROE} = \beta_0 + \beta_1\text{NPLR} + \beta_2\text{CAR} + \beta_3\text{LTDR} + \beta_4\text{LLPR} + e$$

Where, β_0 = constant parameter/ constant term

$\beta_1 - \beta_4$ = coefficients of independent variables

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Asset}}$$

Total Asset

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Owners Equity}}$$

Total Owners Equity

NPLR= Nonperforming Loan Ratio

CAR= Capital Adequacy Ratio

LTDR= Loan To Deposit Ratio

LLPR=Loan Loss Provision Ratio

e= error term

ANALYSIS AND INTERPRETATION

This section of the study concerned on analysis and interpretation, which shows and explains the descriptive statistics analysis, goodness test, Pearson correlation coefficients matrix among identified variables and the final hypotheses test is based pooled on panel regression.

TEST FOR HETEROSKEDASTICITY

In Breusch-Pagan / Cook-Weisberg test for hetroskedasticity, if the p-value is sufficiently small, that is, below the chosen significance level, then hetroskedasticity is a problem for the model otherwise hetroskedasticity is not a problem for the model (wooldridge, 2005). The insignificant result from the Cook-Weisberg test indicates that the regression of the residuals on the predicted values reveals insignificant hetroskedasticity which is a P value greater than 1%, 5% and 10% levels of significance. Thus, there is no hetroskedasticity problem for the values fitted values of Δ GFCE. Breusch-Pagan / Cook-Weisberg test for hetroskedasticity

Table 2: Test for hetroskedasticity

Variables: fitted values of ROE	
chi2(1)	= 0.02
Prob > chi2	0.9008

TEST FOR MULTICOLLINEARITY

Multicollinearity is the undesirable situation where the correlations among the independent variables are string.

The VIF Technique

The variance inflation factor, VIF, is a measure of the reciprocal of the complement of the inter-correlation among the predictor variables: $VIF = 1/(1 - r^2)$ where r^2 is the multiple correlation between the predictor variable and the other predictors. Multicollinearity is said to be a problem when the variance inflation factors of predictors becomes large. How large appears to be a subjective judgment. According to Haan (2002); Robert (2007) VIF values greater than 10 indicate possible problem of multicollinearity. Thus, in table 4.5 below there is no VIF score above value 10; i.e., there is no perfect co-linearity among independent variables.

Variance Inflation Factor

VARIABLE	VIF	1/VIF
ROE	8.50	0.117647
ROA	4.85	0.206185
CA	3.74	0.267499
NPL	2.11	0.474678
LTD	4.62	0.216332
LLP	1.69	0.590944
MEAN VIF	4.25	

4.3. REGRESSION ANALYSIS

Results of Regression Analysis

	Specification (1)
CAR	1.652773** (0.026)
NPLR	-.8659807*** (0.0081)
LTDR	.0284308 (0.192)
LLPR	-.1973942* (0.0288)
_cons	-30.69337*** (0.000)
R-squared	0.5978
F statistics	33.3** (0.0021)
N	10

Figures in parenthesis denote p-values, ***significant at 1 percent, **significant at 5 percent, * significant at 10 percent.

Random effect estimate for Model 1

Variables	coefficients	Standard error	Probability		
conf.interval					
NPLR	-0.083142	0.0090152	0.0000**	-.0939604	-.0542886
CAR	0.054321	0.0523842	0.293	-.0385497	.1298971
LTDR	-0.0006485	0.006558	0.935	-.0138054	.01374
LLPR	0.0936223	0.0154615	0.0000**	.0539653	.1203496
c	0.0332675	0.0065851	0.0000	.0108544	.0369756

R2 = 0.59; D.W= 1.19;N=50; Prob> chi2= 0.9008. Source: Authors computation. * 5 percent level of significance; ** 1 percent level of significance,

Model 1; ROA= $\beta_0 + \beta_1\text{NPLR} + \beta_2\text{CAR} + \beta_3\text{LTDR} + \beta_4\text{LLPR}$.

Model 1; ROA= 0.03-0.083NPLR+ 0.054CAR -0.00LTDR+0.093LLPR.

As stated in research design and methodology section, the study used models to estimate the quantitative effect of credit risk measuring variables (NPLR, LLPR, CAR and LTDR) on profitability of commercial banks in Ethiopia measured by ROA and ROE. The models were tested for OLS assumptions before estimation. To control the presence of hetroskedasticity and autocorrelations the standard errors of the estimators are made to be robust. As observed in the above Table, the R2 is 59 percent indicating that credit risk indicators, independent variables in the model (NPLR CAR LTD and LLPR) explained 59 percent of the variance in profitability performance of Ethiopian commercial banks measured by ROA.

Random effect estimate for Model 2

Variables	coefficients	Standard error	Probability		
conf.interval					
NPLR	-.519329	.131878	0.000**	-.8480259	
					-.280371

CAR	-1.031093	.5004641	0.013*	-1.905939
	-.336235			
LTDR	-.0687818	.0767483	0.267	-.1992094
	.0437452			
LLPR	.7318095	.3397142	0.002*	.3735402
	1.399574			
c	.4186701	.0956647	0.000	.3270291
	.6002151			

R2 = 0.48; D.W= 1.51; N=50; Prob> chi2 = 0.9008; Source: Authors computation.* 5 percent level of significance; ** 1 percent level of significance.

Mode 2; ROE= $\beta_0 + \beta_1 \text{NPLR} + \beta_2 \text{CAR} + \beta_3 \text{LTDR} + \beta_4 \text{LLPR}$;

Mode 2; ROE= .051 - .41NPLR -1.03CAR -0.068LTDR + .73LLPR.

The result from the above model (Table 9) also showed that R2 is 48 percent suggesting that the independent variables in the model explained 48 percent of the variation on profitability performance measured by ROE. With respect to the effect of each independent variable, the result in the above Table indicated that NPLR and CAR negatively affect ROE at 0.01 and 0.05 level of significance respectively. Yet, LLPR showed positive effect and significant at 0.01 level. Holding all other variables constant a unit increase in the level of NPL, ROE is expected to decrease by 0.51 units. A unit increase in the amount of capital adequacy will also lead to a decrease of ROE by 1.03 units.

Discussion on Regression Results

The Impact of Nonperforming Loan on Profitability

Observation from Table 2 suggested that:

NPLR which measures the extent of credit default risk sustained by the banks showed a statically significant large negative effect on profitability measured by ROA.

The result in this respect is consistent with findings of Poudel (2012); Funso et al. (2012) and Chen (2008). Consistent with the findings of previous studies on Ethiopian banks and elsewhere, the criticality of credit default risk on efficient utilization of asset by Ethiopian commercial banks emerged from this study. The good thing is that the descriptive statics and the observation of the trend on NPL in Ethiopian banks as per the study of Getahun (2012) and Melkamu (2012) showed a sharp decline indicating that managers and policy makers in Ethiopia have enhanced credit risk management mechanism in the banking industry. With respect to profitability measured by ROE which indicates how far the owners earned from their investments in Ethiopian commercial banks, NPL showed a significant negative effect. The Negative impact of NPLR on ROE is supported by the finding of Achou and Enguh, (2008). However compared with the impact of NPL on ROA, the impact is high on ROE. The negative correlations between NPLR and ROE and NPLR and ROA are in accordance with most of the previous researches which are conducted in one specific country, including the one conducted by Kargi (2011) in Nigeria, one conducted by Epure and Lafuente (2012) in Costa-Rican banking industry, one conducted by Ara, Bakaeva and Sun (2009) in Sweden and one conducted by Felix and Claudine (2008).

The Impact of Loan Loss Provisions Ratio (LLPR) on Profitability

Surprisingly, loan loss provisions ratio which is a forward looking measure of credit risk is found to have a significant positive effect on profitability measured by both ROA and ROE. This might suggest that the lending business in Ethiopian banks as presumed by managers is risky though it could turn to high profit. Despite such expectation, the sharp decline in NPL (Getahun, 2012; Melkamu, 2012) could also suggest that the managers clearly recognized the risk arising from lending business and strengthen their credit risk management capability in addition to allowing high loan loss provisions to loan and advances.

The Effect of Capital Adequacy Ratio (CAR) on Profitability

Consistent with the findings of Büyükşar and Abdioğ u (2011) and Qin and Dickson (2012), this study showed that CAR has a significant negative effect on ROE, but not on ROA. Holding all other explanatory variables constant, a one unit increase in CAR, ROE is expected to decrease by 1.02 units, which is an inverses relationship. In this respect, Ezike and Oke (2013) mentioned that holding capital beyond the optimal level would inversely affect the efficiency and profitability of commercial banks..

Credit Risk Management Mechanism

	Frequency	Percent	Valid Percent	Cumulative Percent
Screening and Monitoring	4	26.7	26.7	26.7
Collateral Requirement	3	20.0	20.0	46.7
Valid Long-Term Customer Relationship	8	53.3	53.3	100.0
Total	15	100.0	100.0	

As the table depicts above up on the respondents asked which credit risk management mechanism is important to reduce credit risk of commercial Banks, 53.3% of survey respondents chooses Long-Term Customer Relationship, 26.7% of respondents choose Screening and monitoring and 20% of respondents choose collateral requirement as an important mechanism for reducing credit risk. From this the researcher can conclude that Long-Term Customer Relationship is the key mechanism for knowing the feasibility customers' business, integrity, past history or experience of the borrower. So this helps the banks to collect the principal plus interest without any hesitation.

Impact of CRM on Profitability

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Positive	15	100.0	100.0	100.0

As indicated in the above table up on respondents asked about "is credit risk management has a positive/negative impact on profitability", 100% or all survey respondents responded that there is a positive impact on profitability of commercial banks. From this the researcher can conclude that credit risk management has a significant impact on the profitability of commercial banks because the profit of commercial banks is mainly generated from the interest on loans and advances disbursed to various types of customers. this is because banks grant loans and advances with an interest rate greater than the interest rate that they accepts (sets) for deposits.

Up on respondents asked about “what are the reasons for the borrowers default?” 66.7% of survey respondents said unfeasible business Engagement, 20% of respondents said Lack of concentration and 13.3% of respondents said I don’t know. From this the researcher can conclude that unfeasible business engagement is the main reason that makes the borrower not to pay their debt within the stipulated period of time.

Type of Risk That Affect Profitability

	Frequenc y	Percent	Valid Percent	Cumulative Percent
Credit Risk	9	60.0	60.0	60.0
Market Risk	2	13.3	13.3	73.3
Liquidity Risk	1	6.7	6.7	80.0
Operational Risk	3	20.0	20.0	100.0
Total	15	100.0	100.0	

As the above table depicts that when respondents asked about types of risk that affect profitability, 60% of respondents said credit risk, 20% of respondents said operational risk, 13.3 said market risk and 6.7% said liquidity risk. From this the researcher can conclude that credit risk constitute the highest risk that affect the profitability of commercial banks because a huge amount of profit is generated from loans and advances.

CONCLUSION

The paper tries to identify the prevailing relationship between credit risk and profitability performance of commercial banks in Ethiopia. Previous studies in Ethiopia were very few and studies in general were inconclusive. Motivated to fill this gap a descriptive statics and panel data regression analysis were employed on secondary data collected from 5 commercial banks for a 10years period (2005 -2014). The result revealed that credit risk profile of Ethiopian banks had been improving during the study period. The ratio of nonperforming loan and loan loss provision ratio are sharply declining in recent past. Even as the NPL reached minimum, the LLPR is about 2%. The capital adequacy ratio of commercial banks was also found a little bit higher than regulatory requirement at local and international level, but the descriptive analysis

indicated commercial banks in Ethiopia have adequate capital to withstand shocks resulting from credit and other operational risks.

This study found that credit risk measures: nonperforming loan, loan loss provisions and capital adequacy have a significant impact on the profitability of commercial banks in Ethiopia.

The impact level of nonperforming loan ratio is negative which means, a single unit increase in nonperforming loan ratio leads in (.4186701) decrease of profitability of commercial banks of Ethiopia.

Nonperforming ratio have inversely related with profitability whereas capital adequacy ratio has a direct relation with profitability of banks.

The impact level of capital adequacy ratio had also been negative; it indicates that a unit increase of capital adequacy ratio leads 1.03 decreases in profitability of commercial banks of Ethiopia.

Credit risk management of selected commercial banks in Ethiopia is not satisfactory, because both higher in the management position are maximum of BA qualification as the researcher gets from the questioner collected from each banks credit risk management office.

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