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THE EFECT OF CREDIT RISK ON THE BANKING PROFITABILITY: A CASE ON ALBANIA

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Abstract

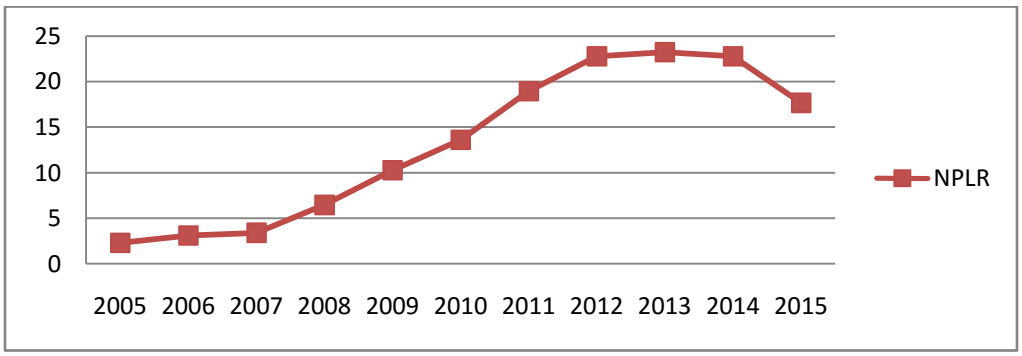
Credit risk is considered as the biggest risk affects bank's financial performance. The main indicator that show the quality of the loan portfolio is non performing loans ratio (NPLR) which is dramatically increased in recent years. Quality of the loan portfolio in the Albanian banking system has been good until 2007 but it began to deteriorate from 2008 onwards. The accelerated growth in the level of non-performing loans in the Albanian banking system remains a major problem for economy in the coming years. Main purpose of the paper is to provide stakeholders correct information in relation to the quantitative relationship that exists between the indicator of credit risk management (NPLR) and profitability indicators ROA (return on assets) and ROE (return on equity) for commercial banks in Albania. On the basis of empirical findings we conclude that despite that in both cases ROA, ROE, the regression coefficients are different from zero and they show for a negative impact of NPLR on the banking profitability represented by ROA and ROE, the lack of sufficient level of significance, does not allow us to express that the model ensures sustainability of this hypothesis.

Keywords: Credit risk management, NPLR, banking profitability indicators, return on assets, return on equity

INTRODUCTION

The commercial banks are businesses that carries multiple risks and for this reason require a special attention in the study of the elements of financial performance and especially in the study of the profitability indicators. We can say that is improved considerably nowadays the awareness for the great importance that have commercial banks in providing of diverse services and play an important role in the development of the financial system in Albania. The process of providing loans exposes banks to high risk, which can lead to financial difficulties including in a way and bankruptcy. Credit risk management is an internal process, which aims to balance the tendency of banks to generate as much income securing a sufficient protection by the risk of counterparty failure for repayment of the obligation. Banking profitability is the result of all banking activities, measurably and the risk management process. It may be a number of internal and external factors that may affect in bank profitability but the object of this study is to identify the impact that has one of the most important indicators of credit risk management that is non-performing loans ratio (NPLR) on the two most important indicators as representatives of banking profitability (ROA and ROE). The quality of lending is crucial for the performance of the banking system in Albania. The quality of the loan portfolio has been good until 2007 but from 2008 and go on, NPL levels have started increasing. As such, the level of nonperforming loans rose from 2.3% at the end of 2005 till 17.66% at the end of 2015 in a model almost stable growth.

Graph 1: The performance of nonperforming loans ratio (NPLR) 2005-2015



Source: Bank of Albania

We see that during this period, this indicator is deteriorated significantly where the highest level has reached the end of 2013 of 23.22%. In the past two years this indicator has had a slight decrease and the main reason is because are deleted lost loans of the balance sheet of banks. Thus, we see an improvement in loan portfolio quality where non performing loans ratio at the end of 2015 results 17.66% compared with 22.76% that was at the end of 2014.

REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

Credit risk is regarded as the greatest risk from all other risks affecting the financial performance of a bank. Koch and MacDonald (2003) showed that this risk occurs when the parties to the loan transactions and derivative transactions cannot meet their commitments, which means that the parties fail to repay principal and interest within the term. Lopez (1999) expressed that credit risk is the risk of reducing the value of the loan due to a change in the borrower's ability to perform payment. Bessis (2002) expressed that credit risk is critic , when a small number of significant customer don't repay loans and can generate huge losses, which can lead to the insolvency of the bank. According to Hosna at al (2009), credit risk is the most important risk facing commercial banks, due to his connection with possible losses. The authors divided the credit risk in three categories which are default risk, exposure risk and recovery risk. According to Tafri et al (2009), credit risk management is important for banks and policy makers because a strong banking system can promote country's financial stability and increases economic resilience to cope with economic crises. Therefore the study and measurement of the effect of credit risk management in the banking profitability is crucial for financial institutions. As long as banks are exposed to loan risk, non performing loans tend to grow that eventually reduce bank profitability, Miller and Noulas (1997). The profitability ratios are used to measure how well a business is functioning in terms of profit. Chin'anga (2015) defines profitability reports as financial measures assessing the capacity of a business to produce income against expenditure and business costs during a certain period of time. Chirwa (2003) mentioned that in previous studies are used different indicators as ROE, ROA and ROC (return on capital) as indicators of profitability. Tafri et al (2009) expressed that among all measures, ROE and ROA are the most important. There are numerous empirical studies about the impact of credit risk management on the banking profitability. Ahmed et al (1998) in their study found that the provisions for lost loans has a significant positive impact on non performing loans. Therefore, an increase in the provision of lost loans, shows an increase in credit risk and deterioration of credit quality, which as a result affects negatively the performance of the bank . In a study, Felix and Claudine (2008) investigated the relationship between banking performance and credit risk management. Their findings concluded that the return on equity and return on assets, two indicator used to measure profitability, were negatively correlated with the ratio of non-performing loans of financial institutions, leading to a decline in profitability. Hosna at al (2009) discovered that NPLR has a more significant effect than CAR (capital adequacy ratio) on the profitability indicator ROE.

Kithinji (2010), found that most of the profits of commercial banks are not affected by the amount of loans and non performing loans, suggesting other variables except the loans and

NPL, which should affect the banks' profits. J. Aduda and J. Gitonga (2011) found that NPLR as an independent variable is connected correctly with the dependent variable ROE, so simple model of linear regression can be used to predict ROE for commercial banks. They noted that despite this, should be careful in the use of model, because other independent variables should be included in the model when they are needed. Fan Li and Yijun Zou (2014) found that from the two representatives of credit risk management, NPLR has a significant impact on both, (ROE and ROA). However, during the period that is taken in the study, relations between all representatives were not consistent but flexible. Bayyoud and Sayyad (2015) used NPLR and ROE and found that credit risk has not impact on profitability of investment and commercial banks in Palestine.

METHODOLOGY

The methodology will be in accordance with the objective and the hypothesis of the paper. For this we will take as representative indicator of credit risk management, non performing loans (NPLR) and two indicators of bank profitability (ROE and ROA) for 16 commercial banks operating in Albania for the period 2008-2015 published in the official route. The data will be used to test the hypothesis, will muster up the quarterly data published in the statistics of the Bank of Albania. The search will consist in combining quantitative methods with qualitative methods. Quantitative methods will seek to identify quantitative relationship between the indicator of credit risk management (NPLR) and banking profitability indicators (ROE and ROA) assessing and the stability of the connection in time in the future. While qualitative methods will be used to prove the hypothesis raised in the study, to interpret quantitative results and to arrive at conclusions and recommendations for the future development of the Albanian banking system. The search model that will investigate the relationship between the indicator of NPLR and two indicators of profitability of commercial banks in Albania will be as below:

$$y_t = \beta_0 + \sum_{i=1}^{n} \beta_i x_{i,t} + \varepsilon_t$$

Where:

y_t is the dependent variable (ROA or ROE)

β_0 is the constant of the model

β_i are the model coefficients for the independent variables included in the model

ε_t is the model error

The quantitative data processing will be done with the help of statistical program SPSS v.21, in order to obtain the linear regression, which will show the relationship between credit risk management (NPLR) and banking profitability indicators (ROA and ROE).

ANALYSIS AND FINDINGS

The hypothesis of this study is build to test the sustainability of the relationship in time between NPLR (non performing loans) and banking profitability represented by the variables (ROA and ROE). As we mentioned, NPLR is considered as the most important indicator of credit risk management and great increase that has suffered this indicator in our study period, is seen as threats to banking system.

Null Hypothesis (H_0)**:** *There is not a stable relationship in time, between the profitability (ROA, ROE) and non performing loans ratio (NPLR) for commercial banks in Albania.*
Alternative Hypothesis (H_a): *There is a stable relationship in time, between the profitability (ROA, ROE) and non performing loans ratio (NPLR) for commercial banks in Albania.*

H_0: $\beta_1 = 0$
H_a: H_0 is not true

Table 1: Correlation matrix for the hypothesis

Correlations				
		ROA	ROE	NPLR
ROA	Pearson Correlation	1		
ROE	Pearson Correlation	.995**	1	
NPLR	Pearson Correlation	-.068	-.104	1

The results presented in Table 1, show statistical links through coefficients PCC between variables we have used to test the hypothesis. For two dependent variables, ROA and ROE, correlative links with independent variable NPLR, are off limits to risk of multicollinearity [PCC(*ROA*, *NPLR*)= - 0.068 and PCC(*ROE*, *NPLR*)= - 0.104]. We note also that these relationships are expressed with a negative coefficient, which indicates that the data collected for couples (*dependent variable, independent variable*), present development trends in the opposite direction, despite that both coefficients have not provided statistical significance level under the minimum limit ($p < 0.05$).

Verification of the hypothesis

To verify the hypothesis, as dependent variable we have taken ROA or ROE, while as an independent variable is taken NPLR. To verify the importance and strength of regressive connection between the profitability measured by ROA, as dependent variable and non performing loans, represented by NPLR as independent variable, we have made the data processing of each quarter through statistical program SPSS v 21.

Table 2: Overview of the model for the hypothesis (dependent variable *ROA*)

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.068[a]	.005	-.029	.48571	.005	.137	1	30	.713

a. Predictors: (Constant), NPLR

In the table 2 notes that R^2 =0.005, a very small value to pretend that the model built with the data which has been processed through the program SPSS v 21, to have a good predictive ability of the model with the reality. So the mathematical model which will be built through results presented in the table 3, it would not be a good predictor model of the relationship between ROA and NPLR.

Table 3: The model results for the hypothesis (dependent variable *ROA*)

		Unstandard. Coeffic.		Standard. Coeffic.			95.0% Confidence Interval for B		Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Const)	.751	.226		3.320	.002	.289	1.214		
	NPLR	-.005	.013	-.068	-.371	.713	-.030	.021	1.000	1.000

a. Dependent Variable: ROA

Mathematical equation (equation 1) is expressing linear mathematical connection between *ROA* and *NPLR* has the form:

$$ROA = 0.751 - 0.005\ (NPLR) + \varepsilon \qquad (1)$$

In this equation, note that the regression coefficient for the independent variable NPLR is different from zero, but this is not enough to conclude for sustainability of the hypothesis through a dependent variable ROA, for the fact that this coefficient does not provide sufficient statistical significance (p= 0.713>0.05) for the correct assessment. Consequently we cannot say that the hypothesis is stable under this model. To take a final statistical decision for sustainability of the hypothesis, we have constructed the linear regression model with the dependent variable (ROE) and the independent variable (NPLR).

Table 4: Overview of the model for the hypothesis (dependent variable *ROE*)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.104[a]	.011	-.022	5.75544	.011	.325	1	30	.573

a. Predictors: (Constant), NPLR

The results presented in Table 4, show that and the dependent variable (ROE), in linear regression with the independent variable (NPLR), has a coefficient of suitability to reality (R^2=0.011), insufficient to give mathematical equation predictive quality, but it is comparatively better (nearly twice better) than the same coefficient for the dependent variable ROA (0.011>0.005). However, (NPLR) as an independent variable, does not provide a forecast quality for the profitability, and if it is represented by the dependent variable (ROA), as well as by the dependent variable (ROE).

Table 5: The results of the model for the hypothesis (the dependent variable *ROE*)

Model		Unstandard. Coeffic.		Standard. Coeffic.			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Const)	9.213	2.682		3.436	.002	3.736	14.690		
	NPLR	-.085	.149	-.104	-.570	.573	-.389	.219	1.000	1.000

a. Dependent Variable: ROE

The mathematical equation of linear regression between (*ROE)* and (*NPLR)* has the form:

$$ROE = 9.213 - 0.085\ (NPLR) + \varepsilon \qquad (2)$$

We note that the regression coefficient in this equation for independent variable (NPLR) is different from zero, but this is not enough to conclude for the sustainability of the hypothesis through the dependent variable ROE, for the fact that this coefficient does not provide sufficient statistical significance (p= 0.573>0.05) to assess its significant. Consequently, we cannot say that the hypothesis is consistent according to this model. Finally, we can say that despite that in both cases (ROA, ROE) the regression coefficients are different from zero and they show for a negative impact on the profitability measured by them, the lack of sufficient level of significance does not allow us to say that the model ensures consistency of the hypothesis.

CONCLUSIONS

During this analysis, we extensively found the relationship between the indicator of credit risk management (NPLR) and the indicators of the banking profitability (ROA and ROE), taking in the study sixteen commercial banks operating in Albania, for the period of study 2008-2015. We are tried to test the hypothesis of this paper, to identify whether there is a stable relationship in time, between the indicator of credit risk management (NPLR) and the indicators of the banking profitability (ROA and ROE). This has a great practical importance for banks in Albania. Through conclusions and findings that we reach from this statistical analysis, we can support arguments, how banks should operate to manage the credit risk, which will lead to improvement of the profitability indicators. The analysis of linear regression model had intended to find out what relationship exists between (NPLR) and the profitability of commercial banks measured by (ROA and ROE). All analysis relied on secondary data published in the three-month statistics for the period of the study 2008-2015, in one of the official sources that is Bank of Albania. Results from testing of hypothesis showed that, despite that in both cases (ROA, ROE), the regression coefficients are different from zero and they show for a negative impact of (NPLR) on the profitability measured by them, the lack of sufficient level of significance does not allow us to say that this model ensures the sustainability of this hypothesis.

LIMITATIONS OF THE RESEARCH

Our study has several limitations as follows:

- All indicators used in the model are calculated in the form of financial reports and to assess their impact in the indicators of profitability , the analysis does not reveal the amount and quality of special components.
- The lack of primary data issued by banks was impossible, therefore the study is based on secondary data

- Independent variables taken in the study as the most important indicators of credit risk management that affect ROE and ROA, are selected primarily on the different models used in the world, so the model of regression is subjective.
- We could not gather information for each bank in particular, but the data we have collected from Bank of Albania are the data for the banking sector in total.
- The last limitation is related to the short period of time (2008-2015), due to the impossibility to collected quarterly data for all indicators for a longer period of time.

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