



Impact of Non-Performing Loans on Bank's Profitability: Empirical Evidence from Commercial Banks in Kosovo

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Abstract

Purpose: The study examined the impact of non-performing loans on Kosovo banks' profitability over a time span of 2010 to 2019.

Methodology: The traditional profit theory was employed to formulate profit, measured by Return on Assets as a function of the ratio of Non-Performing Loans, Liquidity Risk, and Bank Size as control variables. We have employed multivariable linear regression to estimate the determination of the profit function.

Findings: The results showed that the effect of non-performing loans on the profitability is statistically significant and shows that for each 1% increase in NPL, the Return of Assets decreases by 0.19%, holding other variables constant.

Originality/Value: The commercial banks in Kosovo, it is recommend following a balanced approach between portfolio growth and credit risk exposure.

Introduction

Banks are financial institutions who provide financial services that influence society's welfare and economic perspective. The banks' role is even more crucial in developing countries, where loans are the main source of external financing for a business. However, lending activity also presents the main source of income and risk for banks (Kargi, 2011). The financial performance of banks mainly is depended on loan portfolio size and quality. The balanced approach in loan portfolio growth and credit risk espouser present the golden rule. An increase in credit risk exposure presents a serious concern for banks because the situation can easily degrade into financial trouble or bankruptcy. The higher a bank's exposure to credit risk, the much higher banks tend to experience financial crisis and vice-versa (Kalapo et al., 2012).

Credit risk presents a risk of losing when a borrower is not able to pay partly or fully loan repayment, or when loans are in delay for more than 90 days (CBK, 2019). Nsobilla (2015) defines non-performing loans as monetary assets from which banks will not collect interest, or when the payment of loans will not be paid as per the original loan schedule. For all loans delayed, banks are obliged to share reserves, or as is known in professional jargon "provisions", which erode a large part of the profit and thus directly attack the financial result (Klein, 2013; Mwangi, 2012). Further, banks with higher credit risk exposure are forced to recruit new collection staff, establish new departments, increasing of legal representation costs, offering facilities payment terms for clients in delay, or selling loan portfolios below market value to bad debt collection companies.

Also, the credit risk has an inverse influence with customer relationships, emphasizing here trust of bank depositors. An increase in credit risk exposure has direct impact on deposit levels and so on at loan disbursement potential of commercial banks. The recent financial crisis in 2007 presented an original example of how well-known banks can go bankrupt as a result of the loss of trust. In this context, it is in the interest of banks and regulatory bodies to manage effectively credit risk, because it's impacted the bank's financial stability, the stability of the system, and distribution of capital in the economy (Psillaki et al., 2010).

In this context, our research will investigate the impact of NPL on the bank's financial performance, emphasizing here the influence of NPL on commercial banks' profitability in Kosovo over 10 years (2010-2019). While various studies (Kalapo et al., 2012; Nsobilla, 2015; Aliu & Sahiti, 2016, Kingu et al., 2018) have been conducted in the past about credit risk and performance in commercial banks, the results are still mixed. We do not have any study that measures the impact of NPL on the entire Kosovo banking sector; this is our point of entry in this paper.

Other parts of this paper put forward a short literature review regarding aspects of banks performance, credit risk, and impact of NPL on financial performance; the third part describes the research methodology uses; the fourth part presents the main findings of the study and the last section concludes, gives some limitations and future research directions.

Literature Review

Recent years, non-performing loans have been widely discussed in the literature. Granting credit facilities by commercial banks is the primary function, which exposes them to credit risk. Credit risk presents the main risk faced by commercial banks, and banks' financial performance is dependent directly on the quality of the loan portfolio (Giesecke, 2003; Klein, 2013). According to Kaaya and Pastory (2013), credit risk is by far the most significant risk faced by banks, and the performance, survival, and sustainability of their business depend on accurate measurement, sound, and effective management of the risk relative to any other risks. The globalization process has increased competition in banking sectors which is reflected in reducing profit margins and profitability of banks, and thus banks are under pressure to better manage with credit risk exposure (Aliu & Sahiti, 2016).

According to Basel Committee (2000), credit risk is the risk of loss due to a non-payment of an obligation in terms of a loan of other lines of credit. Chen and Pan (2012) define credit risk as the degree of value fluctuation in debt instruments and derivatives due to changes in the underlying credit quality of borrowers and counterparties. Loans and other lines of credits that are at risk for default are usually categorized according to collection expectations into categories such as: "standard",

“doubtful” and “loss” (Kalapo et al., 2012; CBK, 2019). Banks are obliged to use non-performing loans to allocate allowances for credit losses that are collective, impersonal (not related to the specific borrower), and expected (Voloshy, 2020). Loan loss allowances present a safeguarding instrument for banks that amortize the shocks that banks' financial performance faces when a loan is not paid.

Credit risk, measured by non-performing loans, is used as a determinant for bank profitability. The high level of non-performing loans adversely affects provisioning for doubtful debts and written-off loans, which normally affects profitability and capital levels. The NPL ratio serves as a standard measure for quality assets because the risk level is a key factor driving banks' overall performance (Elekdag et al., 2019). We have several papers that study factors that contribute to increasing the level of non-performing loans (Klein, 2013; Ozil, 2019; Kingu et al., 2018) and all came to the same conclusions that there are two categories of determinants of NPL: first, banks specific (size, capitalism, liquidity, and efficiency), and secondly macroeconomic factors (GDP, inflation rate, unemployment rate, and investment rate). Kithnji (2010) emphasized more specific factors that are a source of credit risks such as inappropriate laws, low capital, liquidity levels, direct lending, massive licensing of banks, poor loan underwriting, laxity in credit assessment, poor lending practice, government interference, and inadequate supervision by the central bank.

Whereas, Arko (2012) state that institutions with an aggressive approach, report a large proportion of the loan disbursement to become non-performing loans and finally result in the bad debts, with negative consequences on their overall financial performance. The level of non-performing loans depends on the interest rate and business cycles. It is proved that the level of non-performing loans increases when the economy is in recession; and when the economy has a positive trend, the quality of the portfolio record improvements (Beck et al., 2013; Espinoza & Prasad, 2010). Identification of determinants that influence non-performing loans is important for efficient credit risk management and supervisory bodies to ensure the financial stability of the banking sector (Ozil, 2019).

Theoretical Literature Review

Several theoretical studies have analyzed the impact of non-performing loans on the financial performance of commercial banks. Even in recent years, we have had a huge pool of literature that examines the importance of resource management in determining the profitability of the bank. Due to the multifaceted effect, it is hard to draw clear and concise conclusions regarding the impact of NPL on profitability.

The banks' profitability is measured by different indicators such as liquidity, solvency, (debt/capital ratio), and common indicators such as Return on Assets (ROA) and Return on Equity (ROE) (Nsobilla, 2015). The financial performance traditionally has been measured through ROA and ROE, and most studies prefer ROE more because this indicator combines profit, efficiency, and financial leverage (Mathuva, 2009). Both ROA and ROE are calculated as net profit divided by assets respectively by bank equity. Banks with greater ROA and ROE have better performance and financially are more stable.

The profitability of banks depends on many indicators, but the level of non-performing loans has a crucial role in financial results. Loan portfolios present the highest share in banks' total assets, and banks are actively committed to maintaining credit risk exposure at an optimal level. The credit risk exposure, measured by the rate of non-performing loans (NPL), is used not just to measure banks quality portfolio but also as a tool to compare banks portfolio quality (Festic et al., 2009; Serwa, 2013), to analyses lending policies and the efficiency of banking sectors (Aliu & Sahiti, 2016), to determine bank equity (Aman & Miyazaki, 2009), to predict future bank failure (Jin et al., 2011), and to construct early warning models for financial instability (Kalapo et al., 2012; Kingu et al., 2018).

Non-performing loans impact banks' profitability through decreasing revenues, eroding retained earnings, and capital (Kithinji, 2010). In many studies, ROA and ROE are considered functions of NPL, liquidity, and bank size (Kalapo et al., 2012; Kingu et al., 2018). Fofack (2013) claims that banks' failures are due to non-solvency, associated with massive accumulations of NPLs. Ozil (2019) emphasizes that in addition to the effects on profit, the NPL ratio in aggregate terms affect all loan

banking sector. Klein (2013) concludes that the worsening of loan portfolio quality harmed financial performance and led the country economy into financial crises.

According to Achou and Tenguh (2008), total assets have been empirically proven to be statistically significant on profitability. Clair (2004) established that credit quality, expense control, and proper management of lending activities enhance financial performance. Aliu and Sahiti (2016) emphasized that credit risk management directly affects the type of loans disbursed and the assets that banks' invest, which directly influence the profit.

We know the proverb "prevention is the best cure". Similarly, banks for NPL need to take some preventive measures to maintain the loan portfolio quality. The borrower should be motivated to repay the loan by providing them some benefits such as exemptions, monetary incentives, or have lost contact with them.

Empirical Literature Review

Non-performing loans and profitability relationship has been in the center of banking studies due to its potential for regulatory policies. Based on previous studies, NPLs may have a negative influence on profitability or making banks inefficient. Researchers on banks' profitability have started to consider asset quality, which includes here non-performing assets. Kalapo (2012) used a panel data set from 2000 to 2010 for 5 Nigerian commercial banks to conduct the research. The outcome implied that the NPLs rate was statistically significant and negatively influenced banks' profitability. Patwar and Tasneem (2019) also started in the same research that when the importance of NPLs is unaware, banks could experience disadvantages in efficiency and profitability.

According to Nsobilla (2015), the negative relationship of NPLs with profitability was statistically significant for rural banks in Ghana. According to the same study, if non-performing loans increased by 1% the revenue for banks in the sample will decrease by 0.05%. Kargi (2011) explored (2004 to 2008) the relationship between credit risk and profitability of Nigerian commercial banks revealed a negative relationship. Kingu (2018), in his study in Tanzania with 16 commercial banks for a time span of

2007 to 2015, concludes the inverse relationship of NPL with ROA. The pooled OLS regressions showed that for each 1% increase on NPL, the ROA is affected by -0.19%. Another group of studies concludes that NPL has no impact or statistically is not significant on profitability. Here we have Kaaya and Pastory (2013), he conducted a study in Tanzania with 11 commercial banks. The results showed that NPL does not impact statistically significant banks' performance or ROA. Similarly, Islam (2018) examined the impact of credit risk on the profitability of 56 commercial banks in Bangladesh (2009-2017), and an increase in non-performing loans is not statistically significant. The same line of results is also Do (2020), he found that the ROA is not affected significantly by NPL, or for each one 1% increase on NPL, and the effect on ROA is -0.05%.

Financial Performance of Commercial Bank in Kosovo

The banking sector in Kosovo has fully grown and is domination in the financial sector. After the war ended, the banking sector started from zero, with the support of international organizations' investment. Financial institutions were organized as microfinance institutions, but later they developed, and now are credible banks. According to CBK (2020), the Kosovo banking sector had 11 banking institutions, while 9 were foreign-owned banking institutions. The loan portfolio was €3.2 billion, which presents over 80 % of deposits. The quality of the loan portfolio is quite stables, and NPL is only 2.7 %. The NPL of commercial banks in Kosovo presents the lowest NPL rate in the region. The loan portfolio is well covered by loan provisions, where the ratio of provision coverage is 138.7%.

Table 1. Main indicators for banking sector

Indicators	Statistics
• Assets	• € 5 billion
• Outstanding loan portfolio	• € 3.2 billion
• Deposits	• € 4 billion
• Capital	• € 597 million
• Income , yearly bases	• € 231.2 million
• ROA	• 1.8 %
• ROE	• 15.8 %
• Provisions coverage	• 138.7 %
• Rate of non-performing loans	• 2.7 %

Source: CBK, Monthly Report for Financial Sector, October 2020

The performance of the Kosovo banking sector is not covered so much by the researcher. Only Aliu and Sahiti (2016) researched the impact of NPL on bank profitability. Based on this study, NPL has an inverse relation with banks' profitability.

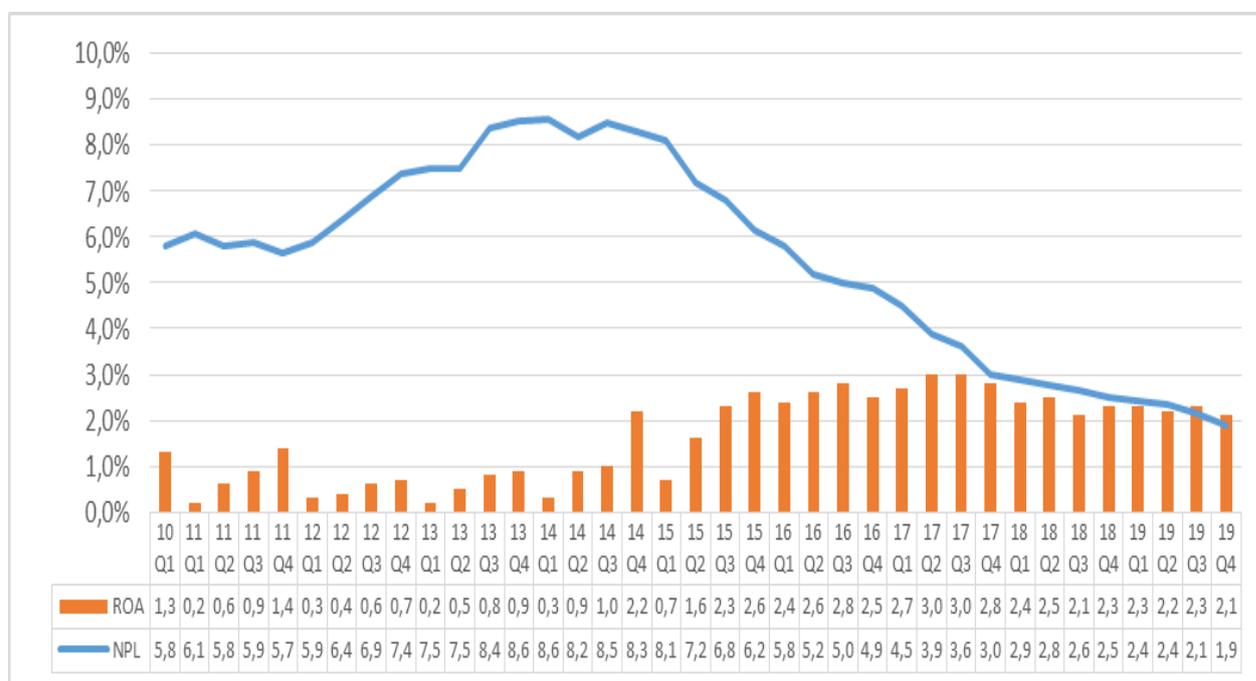


Figure 1. ROA and NPL of commercial banks in Kosovo, quarterly, from 2010-2019.

Source: International Monetary Fund database (<http://www.imf.org/>)

Based on Figure 1, the highest NPL rate was in the period Q3 2013 to Q2 2014, and in the same period, ROA was marked declining. The highest value of NPL was recorded in Q3 of 2013, where the value was 8.3% of the total loan portfolio. The increase in NPL was caused by the financial crises, which impacted the banking sector with a time lag. Whereas ROA was the lowest value recorded in Q1 2011 with just 0.2%.

To contribute to the development of the literature for the banking sector in Kosovo, we formulate the hypothesis:

H₁: The level of NPL has a significant influence on the Kosovo commercial banks profitability.

Research Methodology

To study the impact of the NPL we employed an econometric analysis using monthly data time series for a time span of 10 years (July 2010 to July 2019). This paper is

based on secondary data from the Central Bank of Kosovo reported at the International Monetary Fund for the indicators such as return on assets (ROA), non-performing loans ratio (NPL), risk liquidity (loans/deposits as LQR), and total assets (Ln_Asets). We have made a selection of the time period following the availability of secondary data.

We would analyze variables using descriptive statistics, correlations, variable dynamics, and linear multivariable regression where the variable of interest is NPL and other control variables: liquidity risk and bank size. All the variables employed in the analyses are in the percentage, besides bank size expressed as logarithms of the absolute value of assets. A great advantage of this analysis form is that small changes in the variables are directly interpreted as percentage change to a very close approximation.

Based on previous studies, variables are expected to have parameters as in Table 2.

Table 2. Variables and expected parameters

Variable	Descriptions	Calculation	+/-
ROA	Return on Assets	Net profit/Average assets	N/A
NPL	Non-performing Loan	NPL/Total Loan Portfolio	-
LQR	Liquidity Risk	Loans/Deposits	-
Ln_Asets	Ln of Assets	Ln(Assets)	+

The Econometric Model

To study the impact of NPL and other controlling variables, we have used a multivariable linear regression because it's appropriate for our time series data. The same methodology is used by Kalpo et al. (2012), Nsobilla (2015), and Do (2020).

The ROA is as a function of dependent variables expression as follows:

$$ROA = f(NPL/TL, L/D, \ln_Assets) \dots\dots\dots (1)$$

Where:

- ROA** - Return on Assets
- NPL** - Non-performing Loans
- L** - Total Loan
- D** - Deposits
- Ln_Assets** - Logarithm of Assets

The econometric model has the following expression:

$$KMA = \beta_0 + \beta_1 NPL + \beta_2 LQR + \beta_3 \ln A + \mu \dots\dots\dots (2)$$

Where:

- β_0 = parametric constant or intercept
- β_1 - β_3 = dependent variables constant, and
- μ - error term

The “a priori expectations” in the model is that all the independent variables are expected to have a negative relationship on bank profitability measured by return on assets (ROA) except here bank size expressed by Ln_Assets which is expected to have a positive relationship with the bank performance. The mathematical expression is represented as: β_1 and $\beta_2 < 0$ and $\beta_3 > 0$, implying that a unit in the independent variables will lead to a decrease in the ROA by a unit.

Empirical Results and Interpretations

The descriptive statistics of the variables used to test a hypothesis (return on asset ratio, non-performing loan ratio, liquidity ratio, and total assets) are presented in Table 3.

Table 3. Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
	Stat.	Statistic	Statistic	Statistic	Statistic	Stat.	Std. Err.	Stat.	Std. Err.
ROA	113	,03	3,05	1,5525	,97605	-,071	,227	-1,527	,451
NPL	113	1,98	8,78	5,6285	2,08519	-,194	,227	-1,165	,451
LQD	113	76	88	80,96	2,560	,066	,227	-,212	,451
Tot_aset	113	2203,71	4221,90	3178,279	556,3561	,034	,227	-1,080	,451

Source: Own computations by author

The monthly average value of ROA for commercial banks in Kosovo was 1.55 %, with a minimum of 0.03 % (Sep 2010) and a maximum of 3.05% (Mar 2017). The monthly average of NPL was 5.62%, and with a minimum of 1.98 (Jul 2019) and a maximum of 8.78% (Sep 2013). Based on the results from Table 3, the ratio of liquidity was on a monthly average of 80.96 %, with a minimum of 76% (Jan 2015) and a maximum of 88% (Jun 2018). And the last, the total assets have a monthly average of € 3.18 billion, with a minimum of € 2.2 billion (Apr 2010) and a maximum of € 4.2 billion (Jul 2019).

Correlation Results

After the description analyses of the indicators presented in the section above, we employ the correlation matrix for the variables included in our study. Based on the correlation matrix (Table 4), we observed that the bank's profitability (ROA) and non-performing loans (NPL) had strong negative significant correlations.

Table 4: *Correlation matrix*

	(1)	(2)	(3)	(4)
(1) ROA	1			
(2) NPL	-0.654*** (0.000)	1		
(3) LQD	0.219** (0.020)	-0.450*** (0.023)	1	
(4) Ln_Assets	0.769*** (0.000)	-0.584 *** (0.000)	0.250*** (0.0.008)	1

Note: ***, ** and * represent 1%, 5% and 10% significance level.

Source: Own computation by author

Analyse of Multivariable Linear Regression

After analyzing the descriptive statistics and the correlation relationship between variables, we did some pre-tests to decide which model is more appropriate for our time-series data.

The results of regression analyses are presented in Table 5. The normality distribution was tested through Skewness and Kurtosis, and all variables have normal distributions. Most of the time, in time series data, some econometrics problems appear, such as autocorrelation. But if the results after employed linear

regression found that R2 and adjusted R2 are greater than the Durbin Watson ratio, then the regression results are considered not spurious and are thus acceptable. The VIF test shows that our variables are under 5, so we decide to accept the null hypothesis and conclude that our model has no multicollinearity. The Breusch-Pegan/Cooc-Weisberg test for heteroscedasticity has a p-value greater than the significance level, so we can't reject the null hypothesis and conclude that the residuals are homoscedastic.

However, to make the results unbiased, we add robustness to the regressions. We will interpret only results that are derived from multivariable linear regression.

Table 5. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	,830 ^a	,690	,681	,55605	,690	77,725	3	105	,000	,368

a. Predictors: (Constant), NPL, LQD, ln_Assets
 b. Dependent Variable: ROA

Source: Own computation by author

The R square and R2 ratios are quite higher, which shows that independent variables present dependent variables with 69%. The F ratio is higher as well and the significance level is 0.

Table 6. Multivariable Linear Regression Results

<i>Number of observations</i>	109					
<i>Sample:</i>	Commercial banks in Kosovo					
<i>Dependent variables</i>	Return on Assets (ROA)					
<i>Variables name</i>	<i>Coefficient</i>	<i>Stf.Err.</i>	<i>t</i>	<i>P> t </i>	<i>Collinearity Statistics</i>	
					<i>Tolerance</i>	<i>Tolerance</i>
<i>NPL</i>	-0.194	0.0384	-5.07	0.000	0.489	2.045
<i>LQD</i>	-0.0456	0.0262	-1.74	0.085	0.656	1.524
<i>SIZE (ln_Assets)</i>	3.4227	0.3819	8.96	0.000	0.697	1.434
<i>cons.</i>	-21.24	4.1424	-5.13	0.00	0.697	1.143

Source: Own computation by author

Based on the results, variables such as NPL and LQD have a significant negative impact on ROA, while the relationship between the Assets or bank size and ROA is positive and statistically positive. The results reflect that the coefficient of our variable of interest NPL to ROA is negative and statistically significant and shows that, as NPL increase for 1%, the ROA decrease for 0.20%, holding other variables constant. Our results are consistent with the literature and empirical results that support the negative effect of NPL on the ROA and banks' profitability (Nsobilla, 2015; Kargi, 2011; Kingu et al., 2018).

The coefficient of liquidity risk (LQD) is also negative but not statistically significant. Showing that for a 1% increase in LQD, ROA will decrease by approximately 0.05%.

The coefficient of bank size (Ln_Assets) exerts a positive and statistically significant influence on the ROA for commercial banks in Kosovo, showing that for a 1% increase in assets (Ln_Assets), ROA will for 3.4%, holding other variables constant.

Based on the results from the regression analysis, we can establish the econometric equation as follows:

$$Y (\text{ROA}) = -21.24 - 0.194 (\text{NPL}) - 0.045 (\text{LQD}) + 3.422 (\text{Size})$$

Hypothesis

Based on the results from analyses, in Table 7 we have listed the results of tested hypotheses.

Table 7. Hypothesis results

Hypothesis	Coeff.	Sig	Decision
H1 NPL impact ROA commercial banks in Kosovo	-0.194	0.00	Approved
H2 LQD impact the ROA of commercial banks in Kosovo	-0.045	0.08	Rejected
H3 Bank size impact the ROA of commercial banks in Kosovo.	3.422	0.00	Approved

Source: Own computation by author

Conclusions

This paper aims to study the nature of NPL and its impact on the profitability of commercial banks. To achieve our goal, we have performed a quality analysis by using monthly time series data for the time period Jul 2010-Jul2019.

The first hypothesis, regarding the influence of NPL on the profitability of commercial banks, was true based on the regression results that confirm a significant and negative relationship between the NPL and ROA for the bank's sector in Kosovo. The study may impact credit risk procedures and policies used by banks, but also supervisory from the Central Banks of Kosovo should be more vigilant on monitoring. Banks should follow a balanced approach between loan portfolio growth and credit risk exposure. When credit risk increases, the profitability of banks is directly impacted.

Based on data from the International Monetary Fund, the NPL level in Kosovo is the lowest in Western Balkan Countries. However, the Kosovo banking sector should maintain in control NPL, and in this way to keep the banking system safe and maintain the trust of depositors. The impact of liquidity risk shows a negative relation but not statistically significant on banks' profitability. We can say that banks' who have under control credit risk and liquidity risk are in a good way to achieve their profitability goals,

In the end, the relationship between bank size and bank profitability (ROA) shows positive relations and statistically is significant. Bank size has an important role for banks to achieve better financial results and can serve as an amortization if banks face loan default.

Some limitations of this article were identified: the biggest one is related to the fact that commercial banks in Kosovo are not publishing information in quality or monthly data in the reports. The inability to analyze banks individually presents an obstacle to comparisons between them. Also, in the literature, other methods could be used to study the influence of NPL on banks' profitability, like dynamic panel data analyses, similar to Do (2020) or Kalpo (2012), instead of time series data analysis.

As a future research direction, the purpose of this study is to extend into other countries and to compare results for different states. A more detailed investigation of the ECL model includes here factors that contribute to the NPL level and analyzes NPL characteristics at the bank's level.

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