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Jehona Shkodra

PhD in Economics, Associate Professor,
University of Prishtina, Prishtina,
Albania;
e-mail: jehona.shkodra@uni-pr.edu
ORCID: [0000-0001-9207-4098](https://orcid.org/0000-0001-9207-4098)
(Corresponding author)

Dimitrios Anastasioub

PhD in Economics, Senior Research
Fellow, Athens University of Economics
and Business, Athens, Greece;
ORCID: [0000-0003-2087-0807](https://orcid.org/0000-0003-2087-0807)

Christos Kallandranisc

PhD in Economics, Assistant Professor
of the Department of Accounting &
Finance, University of West Attica,
Athens, Greece;
ORCID: [0000-0003-2111-4448](https://orcid.org/0000-0003-2111-4448)

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THE IMPACT OF NON-PERFORMING LOANS ON COMMERCIAL BANK PROFITABILITY: EVIDENCE FROM THE WESTERN BALKANS

ABSTRACT

Our results show that there is a clear negative relationship between return on assets and NPLs, suggesting that an increase in NPLs leads to lower bank profitability.

The objective of this study is to investigate whether non-performing loans (NPLs) have an impact on the profitability of commercial banks in the Western Balkans Countries (WBC hereafter) namely Albania, Kosovo, Montenegro, Northern Macedonia and Serbia. Our sample includes all commercial banks in the WBCs for the period 2010-2020.

We define return on assets (ROA) as a proxy for bank profitability, which is the dependent variable in this study. Our main explanatory variable is the ratio of NPLs to total loans (NPLs). In addition, we consider the following control variables: CAR (Capital to Risk-Weighted Assets); OCE (Operational Cost Efficiency); LIQ (liquidity).

Our study suggests that financial institutions and policymakers in general should keep an eye on NPL holdings, as any additional inflow of "dubious" loans into the financial sector increases the likelihood of banks running into profitability problems. Several policy implications arise from the findings of this study, not only for practitioners and bank managers but also for regulators and policymakers. On the one hand, bank managers should thoroughly check customer data before granting credit in order to reduce information asymmetry and minimise potential NPL values. On the other hand, regulators need to closely monitor banks' capital adequacy and profitability ratios to mitigate a potential bank failure due to the accumulation of high NPL values.

Keywords: nonperforming loans, profitability, commercial banks, Western Balkan countries

JEL Classification: C22, C23, C51, G2, G21

INTRODUCTION

The main source of income for banks is, of course, lending. Nevertheless, banks are exposed to credit risk when granting loans. The risk associated with lending is the possible loss of a fully or partially defaulted loan. Credit risk is an external factor that influences a bank's performance. The propensity of a bank to go through a financial crisis increases with the credit risk to which it is exposed, and vice versa.

In recent decades, the issue of non-performing loans (NPLs) has gained global prominence due to the negative impact that credit risks and NPLs have on the bank performance of banks and the economy as a whole.

The efficiency of a bank's performance is determined by its ability to maximize profit while maintaining a low degree of risk for its customers. Most developing and developing countries, including the Balkan countries, are dominated by commercial banks as the main financial institution. While poorly managed commercial banks hinder economic development, well-managed commercial banks accelerate economic growth. Since loans are intended to earn interest over time, they are considered assets of a business enterprise. However, this is not always the case. Non-performing loans (NPLs) are loans that are not performing as expected.

Non-performing loans (NPLs), which are loans that are more than 90 days overdue, have created growing financial strain on banks' balance sheets, hindering their ability to fulfil their intermediary function and support economic growth. Commercial banks in several nations, such as Albania, Kosovo, Montenegro, Northern Macedonia, and Serbia, are facing a persistent issue in managing non-performing loans. Non-performing loans are considered a detrimental aspect that has the most significant influence on bank profitability. Financial institutions experiencing profitability issues may be deemed bankrupt banks. Bank insolvency is a significant issue in numerous global economies. Anastasiou et al. (2016) identified asset quality degradation as a primary cause of bank insolvency, particularly following the onset of the financial crisis post-2007. The evolution of the banking system and increased competition in the banking sector have led to a focus on the development and management of Non-Performing Loans (NPLs) by academics and researchers in this field.

It is crucial to determine if non-performing loans (NPLs) significantly impact commercial bank profitability, which is also relevant for policy considerations. High levels of non-performing loans are a significant issue in the banking sector and might potentially result in bank failures. High levels of non-performing loans (NPLs) indicate low economic development and potentially negative financial prospects. The banking sector's significance in a country's economic development is highlighted by these factors (Anastasiou et al., 2020). Financial institutions and authorities should monitor non-performing loan values closely since any increase in risky loans entering the financial sector raises the chances of banks facing profitability issues.

The increase in the number of non-performing loans has a significant impact on the profitability of banks. The bank must continue to make provisions for loans categorized at a certain rate. A large number of non-performing loans and related provisions impede the flow of income and increase operating costs, which reduces the bank's profitability. For this reason, this study analyzes how non-performing loans affect the profitability of banks in the Western Balkans, controlling for operational efficiency.

LITERATURE REVIEW

The impact of non-performing loans on the financial performance of commercial banks has been the subject of several studies. The existing empirical data can be sorted to identify some of these non-performing loan factors that have been repeatedly identified in studies as significant determinants of bank performance, although the debate about their usefulness in explaining commercial bank financial performance is still widespread and unresolved. This section provides an empirical overview of previous research on the relationship between non-performing loans and financial performance in established and emerging markets.

There is an abundance of work investigating the impact of bank profitability on non-performing loans (NPLs). Louzis et al. (2012) examined the determinants affecting non-performing loans (NPLs) in the Greek banking sector for different loan categories (business, consumer, and mortgage) by employing dynamic panel data techniques. Macroeconomic variables and managerial calibre are the main contributors to non-performing loans in the Greek banking sector across all loan categories. Messai & Jouini (2013) analysed the determinants influencing non-performing loans (NPLs) in 85 banks from Greece, Italy, and Spain. The study utilised GDP, the unemployment rate, and the real interest rate. They advocate those problematic loans correlate positively with the real interest rate, loan loss provisions as a percentage of total loans, unemployment rate, and GDP growth rate, and negatively with the profitability of bank assets. Çollaku & Aliu's (2021) examination of Empirical Evidence from Commercial Banks in Kosovo found that non-performing loans have a statistically significant impact on bank profitability. They discovered that a 1% rise in non-performing loans results in a 0.19% decrease in return on assets. Djalilov & Piesse (2016) studied the factors that affect bank profitability in the early transition countries of Central and Eastern Europe (CEE) and the late transition countries of the former USSR. They show that profitability persists and that various transition countries have distinct factors of bank profitability. Anastasiou et al. (2016, 2017, 2019) and Ariyadasa et al. (2016) together with Shkodra and Beqiri (2012) and Shkodra and Ismajli (2017) studied the impact of bank profitability on non-performing loans (NPLs).

Numerous studies also investigate the impact of non-performing loans on bank profitability. Akter & Roy (2017) utilised several ratios and an econometric linear regression model to analyse the time series trend of NPLs, their growth, provisioning, and their relationship with bank profitability. H. Do et al (2020) examined how non-performing loans (NPLs) affect the profitability of commercial banks in Vietnam.

In this context, an increase in non-performing loans (NPLs) reduces the bank's return on equity and, thus, its profitability. Kolapo et al. (2012) and Muhammad et al. (2012) investigated the impact of credit risk on the non-performing loan (NPL) performance of Nigerian banks as a proxy for overall performance. A cross-sectional invariant link exists between credit risk and bank performance, as demonstrated by bank non-performing loans (NPLs).

Kingu, Macha, and Gwahula (2018), Kuznetsova, Azarenkova, and Olefir, Ie. (2017) examined the impact of non-performing loans (NPLs) on bank profitability by utilising the information asymmetry theory and the inadequate management hypothesis. A negative link was found between the profitability levels of Tanzanian commercial banks and non-performing loans. High non-performing loans (NPLs) negatively affect banks' net earnings by requiring write-offs and provisions for doubtful debts, which can lower banks' capital levels and profitability (Ombaba, 2013; Kingu, Macha & Gwahula, 2018). NPLs are considered an essential measure of bank profitability.

Barseghyan (2010) stated that Non-Performing Loans (NPLs) have significant social and economic consequences by decreasing social welfare and causing a decrease in output growth.

Regehr & Sengupta (2016) found a positive correlation between US bank profitability and size, indicating that larger banks tend to have greater NPL ratios.

Saeed (2014) found that bank size positively affects profitability and that the inflation rate has a negative impact when using regression models for the UK. Djalilov & Piesse (2016) utilised a GMM technique to analyse eight transition nations and found that bank profitability is influenced by characteristics such as property rights, GDP growth, inflation, credit risk, capital, size, concentration, and financial flexibility.

Varied viewpoints on the same topic offer interesting possibilities for scholars.

In this paper, we have utilised Non-Performing Loans (NPLs) as a potential issue that may impact the profitability of commercial banks in the WBC.

AIMS AND OBJECTIVES

The objective of this study is to determine the impact of NPLs on the profitability of commercial banks in the WBC. Furthermore, the study investigates whether non-performing loans (NPLs) have an impact on the profitability of commercial banks in the Western Balkan countries (WBC) - Albania, Kosovo, Montenegro, North Macedonia and Serbia.

The specific objective of the study is to confirm the relationship between problem loans and bank profitability in the Western Balkans. This will help to take measures to reduce the number of problem loans and their specific weight in banks' loan portfolios.

METHODS

In business, profitability is a crucial concept that measures a company's ability to make a profit within a given period of time. As it determines the financial viability and long-term sustainability of the business, it is the ultimate goal of any organisation, including commercial banks. With reference to relevant research, we will look at the concept of profitability in this literature as well as its meaning and the methods used to measure it. Profitability is crucial for organisations as it enables them to generate returns for their investors, reinvest in the business and maintain financial stability. Since higher profits can result from a competitive advantage, efficient operations and skilful management, profitability is also an important measure of a company's competitiveness in the marketplace. The key to a successful banking business therefore lies in understanding profitability and its determinants.

In this study, we collect annual data on WBC profitability. Our sample covers the period from 2010 to 2020, and we specifically consider the following five countries in our analysis: Albania, Kosovo, Montenegro, Northern Macedonia, and Serbia.

Following (Akter & Roy, 2017; Anastasiou et al., 2016; Kingu. et al., 2018; Shkodra, 2019), we define return on assets (ROA) as a proxy for bank profitability, which is the dependent variable in this study. Our main explanatory variable is the ratio of NPLs to total loans (NPLs). In addition, we consider the following control variables:

CAR (Capital to Risk-Weighted Assets) is used to ensure that the bank can bear an adequate amount of losses and meet regulatory capital requirements.

The capital ratio (CAR) represents a bank's exposure to its current obligations and risk-weighted assets. It's computed by taking the capital of a bank and dividing it by the risk-weighted assets.

OCE (Operational Cost Efficiency) corresponds to the economic goals of a bank to minimise costs. Cost efficiency is defined as the ratio between the minimum costs at which a certain production volume can be achieved and the realised costs.

LIQ (liquidity) is a factor that determines the liquidity conditions of banks. Commercial banks should have liquid assets in order to be able to lend to their customers. In addition, banks should maintain a sufficient level of liquidity to withstand all possible types of stress events.

The variables were taken from the publications of the central banks of each WBC (i.e., Albania, Kosovo, Montenegro, Northern Macedonia and Serbia) as well as from the reports of the World Bank (WB) and the International Monetary Fund (IMF).

Table 1 documents the main descriptive statistics for each variable and the banking system/country studied. As we can see, the banking systems in Albania and Serbia register the highest NPL values, while the banking system of Kosovo seems to be the one with the lowest NPL value in our sample.

Country	stats	ROA, %	NPL, %	CAR, %	OCE, %	LIQ, %
Albania	Mean	0.82	16.64	16.54	56.46	13.15
	Min	0.20	6.60	15.40	15.30	8.50
	Max	1.50	23.50	18.20	77.60	21.97
Kosovo	Mean	1.85	5.47	17.82	50.64	32.41
	Min	0.70	2.70	16.80	21.90	27.00
	Max	2.80	8.50	19.00	66.60	37.80
Montenegro	Mean	-0.28	14.21	16.03	62.13	21.08
	Min	-2.50	7.20	14.20	40.90	11.20
	Max	1.00	21.00	20.00	81.40	29.00
North Macedonia	Mean	0.97	8.51	16.18	62.40	24.19
	Min	0.40	5.00	15.20	52.10	16.90
	Max	1.70	10.90	17.10	70.40	29.40
Serbia	Mean	0.90	16.29	20.96	29.20	27.52
	Min	-0.10	5.10	19.10	19.10	20.85
	Max	2.20	21.60	22.84	64.40	41.03

Table 2 shows the correlation coefficients between the explanatory variables. From the results of Table 2, we cannot find extreme correlations between our independent variables and conclude that our models will not suffer from multicollinearity problems.

	NPL	CAR	OCE	LIQ
NPL	1.00	-	-	-
CAR	-0.12	1.00	-	-
OCE	0.21	0.12	1.00	-
LIQ	0.01	0.35	-0.15	1.00

The scatter plot in Figure 1 shows a clear adverse connection between ROA and NPL, suggesting that an increase in NPL levels leads to lower ROA. Our earlier assumption that NPLs are negatively correlated with ROA thus seems to be confirmed by this preliminary evidence. However, it needs to be confirmed in a formal econometric framework by estimating an econometric model.

As far as the econometric modelling is concerned, we estimate two alternative dynamic econometric specifications:

$$\text{Model (1): } ROA_{i,t} = a + \beta * ROA_{i,t-1} + \gamma * NPL_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\text{Model (2): } ROA_{i,t} = a + \beta * ROA_{i,t-1} + \gamma * NPL_{i,t} + \delta * X_{i,t} + \varepsilon_{i,t} \quad (2)$$

Here ROA stands for return on equity, NPL for the ratio of NPL to total loans, X for a vector of bank-specific variables at the country level, and i and t for the Western Balkan banking systems (countries) and time (years), respectively.

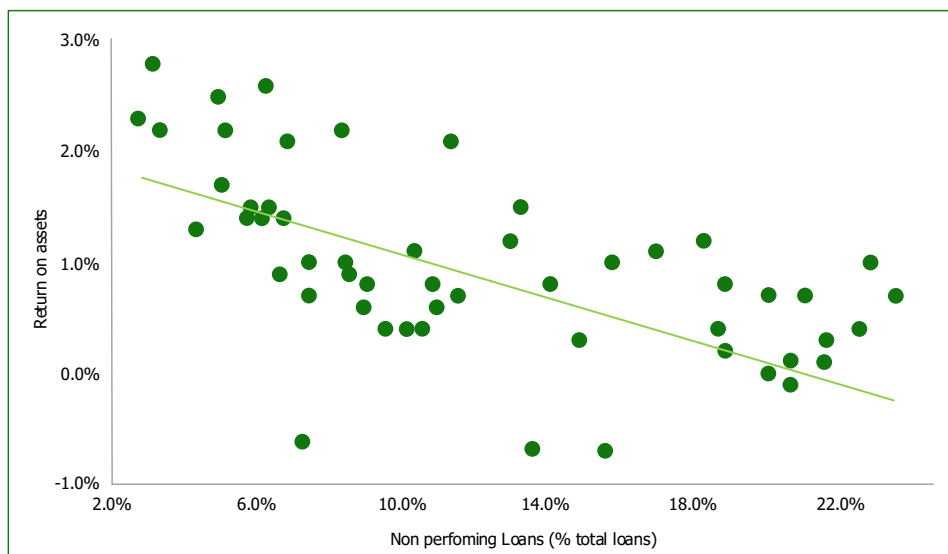


Figure 1. Relationship between Return on assets and NPLs (2010-2020).

In both models, we include the dependent variable as an explanatory variable expressed with a lag of one period to obtain dynamic specification models. The reason why we consider dynamic specifications is twofold: first, because we want to exclude a possible bias due to omitted variables, and second, because we want to investigate the possible persistence of the return on equity.

However, this may lead to an endogeneity problem. Therefore, to eliminate possible endogeneity problems, we estimate our two models using the systemic generalised method of moments (system-GMM) with robust standard errors. The system-GMM method was first proposed by Blundell and Bond (1998). The classical difference GMM approach.

Originally put forth by Arellano and Bond (1991), it was not favoured because to substantial finite sample bias and poor simulation accuracy, per the literature. Wintoki et al. (2012) state that when there are several sources of endogeneity present in panel data, the system GMM consistently yields reliable results.

We utilized the lag values of the explanatory and dependent variables as the instrument for the system GMM estimate. In order to make these instruments consistent with the findings of the Arellano-Bond autocorrelation test and the Sargan overidentification test, the number of lags utilized in each econometric specification was selected.

RESULTS

The results show that WBC banks should adapt their lending policies to the status of the economy, as non-performing loans tend to increase during study periods. Banks should implement robust credit risk management procedures to reduce the increase in non-performing loans caused by increased lending. The overall level of risk and the degree of credit risk tolerance should be explicitly defined in the risk management plan as they serve as operational guidelines for risk management. The development of the bank's credit risk strategy must begin with a detailed analysis, a clear understanding of the bank's operational environment and knowledge of the financial environment.

Figure 2 shows the frequency distribution of the residuals of each model together with the Jarque-Bera statistic.

A complement of common descriptive statistics for the residuals are displayed in addition to the histogram. Utilizing the data in the present sample, all statistics are computed. Calculated using the following formula, the Jarque-Bera statistic has an X² distribution with two degrees of freedom under the null hypothesis of normally distributed errors:

$$Jarque - Bera = \frac{N}{6} \left(S^2 + \frac{(K-3)^2}{4} \right) \quad (3)$$

where *S* is the skewness, and *K* is the kurtosis.

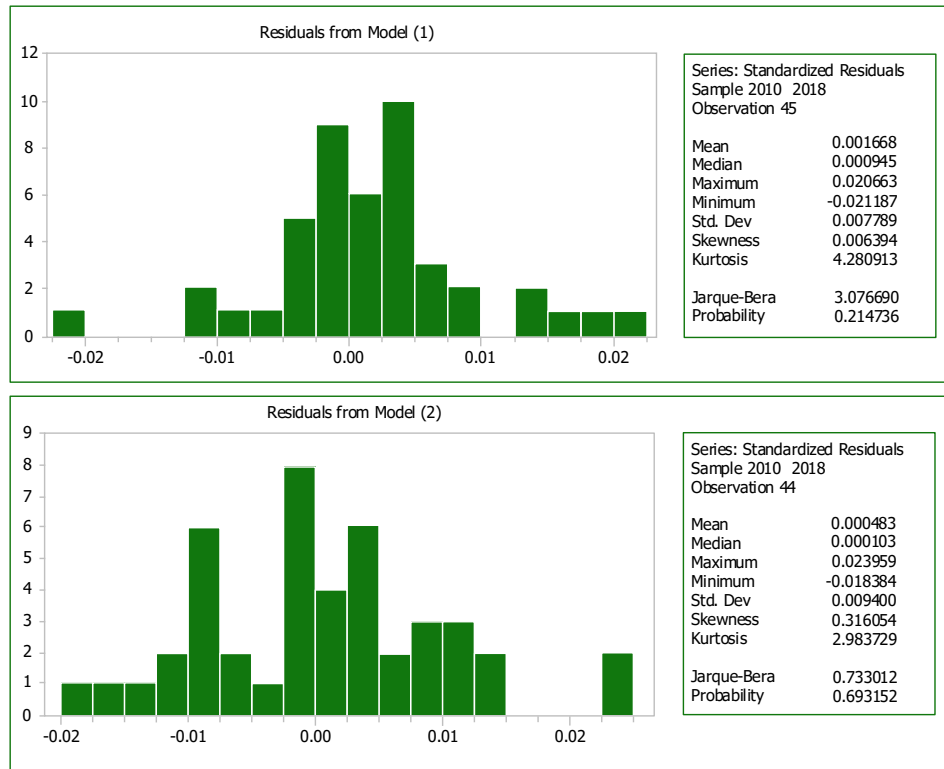


Figure 2. Histogram-Normality test for each model.

A small probability value leads to the rejection of the null hypothesis of a normal distribution. As we can see, the probability value for each model is greater than 0.10, which means that the residuals of our models are normally distributed.

The time series properties of the variables under study are first assessed using the Augmented Dickey-Fuller (1981) unit root test. After estimating our econometric models using the system GMM method, the results are reported in Table 3.

Table 3. Results of the System-GMM estimation for the profitability of Western Balkan banks. Notes: The significance level is indicated by the number of stars (*), which is <math><0.01</math>, <math><0.05</math>, and <math><0.1</math> for p-values. Cluster robust z-statistics, or z-statistics modified for country-level clustering, are shown in parenthesis.

VARIABLES	Model 1	Model 2
ROA (t-1)	0.477*** [0.057]	0.499*** [0.065]
NPL (t)	-0.132*** [0.014]	-0.130*** [0.025]
CAR (t)	-	0.182*** [0.048]
OCE (t)	-	0.027* [0.015]
LIQ (t)	-	-0.026 [0.018]
Constant	0.004*** [0.001]	0.010* [0.005]
Observations	50	49
Number of country ids	5	5
Diagnostics		
Wald chi-squared	214.56	465.14
Arellano-Bond test [AR (1)]	0.199	0.163
Arellano-Bond test [AR (2)]	0.388	0.490
Sargan test	0.113	0.060

DISCUSSION

We contributed to the existing research on bank profitability by examining the influence of return on assets (as a profitability indicator) on non-performing loans in World Bank Countries. This is the first empirical study in the literature to investigate this research subject for the Western Balkans region.

The variable NPL has a notable adverse effect on the return on equity, as indicated by our findings. Consistency in the results is shown in both models. The coefficient of NPL was statistically significant at the 1% level.

Therefore, it can be deduced that the profitability of banks declines with an increase in non-performing loan levels. The results align with the studies conducted by Muhammad et al. (2012), Samuel et al. (2012), Madishetti & Rwechungura (2013), and Kolapo et al. (2012). The coefficient of ROA lagged by one period is approximately 0.50 in both models, indicating a lack of significant persistence in ROA. This finding aligns with the theory of information asymmetry and the poor management hypothesis, suggesting that adverse selection leads to a rise in non-performing loans (NPLs) due to management's inability to oversee operational efficiency, ultimately leading to reduced profitability.

Findings from this study can help to reduce the proportion of non-performing loans (NPLs) at WBC banks. It is advisable for bank management to address a number of NPL-related issues by focusing on ROA, CAR, OCE, LIQ, economic sustainability and the political instability index. To keep the NPL ratio stable, banks need to increase their profitability. We can also argue that risky financial practices, which in turn lead to financial fragility and an increase in the non-performing loan (NPL) ratio, are fuelled by government failure. The notion that a sound and stable financial sector depends on the political order and the quality of institutions is supported by our findings.

Banks in Albania and Serbia are advised to ensure that borrowers are able to repay their debts in order to reduce the number of non-performing loans (NPLs). To ensure that the required return is realised, banks can offer expert advice on loan investments. To track the performance of the business for which a customer has applied for a loan, banks should also ensure that customers applying for loans are closely monitored. They would benefit from knowing the current status of their customers' businesses in order to take the appropriate action before it is too late. To ensure that investors in the banking sector are not deterred, NPL needs to be scrutinised further.

The Arellano tests do not invalidate the hypothesis that errors are not autocorrelated up to the second order. The over-identifying constraints are valid, and the instruments utilised are appropriate based on the Sargan test.

Electronic platforms should be made available to check whether a consumer's assets are being used as collateral for a loan from another provider. It is necessary to establish penal norms for defaulters, otherwise this will lead to non-performing loans. Finally, it is necessary to impose a penalty on banks that have a high rate of non-performing loans. Nevertheless, banks that are able to keep their NPL ratio as low as possible should be rewarded.

WBC banks should align their lending policies with the status of the economy, as non-performing loans tend to increase during recessions and decrease during prosperous periods. Banks should implement robust credit risk management procedures to reduce the increase in non-performing loans caused by increased lending. The overall level of risk and the degree of credit risk tolerance should be explicitly defined in the risk management plan as they serve as operational guidelines for risk management. The development of the bank's credit risk strategy must begin with a detailed analysis, a clear understanding of the bank's operational environment and knowledge of the macroeconomic environment.

CONCLUSIONS

Annual data for the period 2010-2020 were analysed using the system GMM as the estimation method. We found a clear unfavourable connection between ROA and NPL, suggesting that an increase in NPL levels leads to lower ROA. In other words, higher NPL levels lead to lower profitability of banks in the Western Balkans. Therefore, banks should aim to reduce their NPLs if they want to increase their profitability. Several policy implications arise from the results of this investigation, not only for practitioners and bank managers but also for regulators and policymakers. On the one hand, bank managers should thoroughly review customer data before granting credit to reduce information asymmetry and minimise potential NPL values. On the other hand, regulators must carefully observe banks' capital adequacy and profitability ratios to mitigate a potential bank failure due to the accumulation of high NPL values.

The study therefore suggests that commercial banks in WBC should implement sound corporate governance, availability of verified collateral for loan exposures, efficient credit policies reflected in flexible maturities and smooth restructuring of loan terms with recognisable red flags to enhance profitability through guaranteed returns.

Future research could build on this finding in a variety of ways. Initially, additional explanatory variables could be included, taking into account the general macroeconomic environment of the Western Balkans. In addition, a micro-level analysis could be conducted to investigate whether the NPLs of each individual bank (rather than each banking system) affect the profitability of Western Balkan banks.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

Conceptualization: Jehona Shkodra, Dimitrios Anastasioub, Christos Christos Kallandranisc

Data curation: Jehona Shkodra

Formal Analysis: Jehona Shkodra, Dimitrios Anastasioub, Christos Christos Kallandranisc

Methodology: Dimitrios Anastasioub, Christos Christos Kallandranisc

Software: Dimitrios Anastasioub

Resources: Jehona Shkodra

Supervision: Jehona Shkodra, Dimitrios Anastasioub, Christos Christos Kallandranisc

Writing – review & editing: Jehona Shkodra, Dimitrios Anastasioub, Christos Christos Kallandranisc

Writing – original draft: Jehona Shkodra

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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Шкодра Й., Анастасіуб Д., Калландраніск Х.Х.

ПЛИВ НЕПРАЦЮЮЧИХ КРЕДИТІВ НА ПРИБУТКОВІСТЬ КОМЕРЦІЙНИХ БАНКІВ: ДОСВІД ЗАХІДНИХ БАЛКАН

Наші результати показують, що існує чіткий негативний зв'язок між прибутковістю активів та непрацюючими кредитами, що свідчить про те, що збільшення непрацюючих кредитів призводить до зниження прибутковості банків.

Метою цього дослідження є вивчення впливу непрацюючих кредитів (NPL) на прибутковість комерційних банків у країнах Західних Балкан (WBC) – Албанії, Косово, Чорногорії, Північній Македонії та Сербії. Наша вибірка включає всі комерційні банки WBC за період 2008-2018 рр.

Ми визначаємо рентабельність активів (ROA) як показник прибутковості банку, який є залежною змінною в цьому дослідженні. Основною пояснювальною змінною є відношення непрацюючих кредитів до загального обсягу кредитів (NPL). Крім того, ми розглядаємо такі контрольні змінні: CAR (Capital to Risk-Weighted Assets); OCE (операційна економічна ефективність); LIQ (ліквідність).

Наше дослідження показує, що фінансові установи та політики повинні стежити за активами NPL, оскільки будь-який додатковий приплив «сумнівних» кредитів у фінансовий сектор збільшує ймовірність виникнення в банків проблем із прибутковістю. Результати цього дослідження впливають із кількох політичних наслідків не лише для практиків і менеджерів банків, але й для регуляторів і політиків. З одного боку, менеджери банків повинні ретельно перевіряти дані клієнтів перед наданням кредиту, щоб зменшити інформаційну асиметрію та мінімізувати потенційні значення NPL. З іншого боку, регуляторам необхідно уважно стежити за рівнем достатності капіталу та прибутковості банків, щоб мінімізувати потенційне банкрутство банків через накопичення високих значень непрацюючих кредитів.

Ключові слова: непрацюючі кредити, прибутковість, комерційні банки, країни Західних Балкан

JEL Класифікація: C22, C23, C51, G2, G21