Impact of Covid-19 and Non-performing Loan Determinants: Case Study Republic of Kosovo

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Abstract

This paper explores the repercussions of the COVID-19 pandemic on the banking sector, focusing on the escalation of credit risk and its effects on non-performing loans (NPLs), loan loss provisions, and economic activity in the Republic of Kosovo. Amidst the global health crisis, the banking industry faced heightened risk, resulting in increased NPLs, heightened loan loss provisions, and diminished economic operations throughout 2020. Despite these challenges, the sector demonstrated resilience by adhering to governmental guidelines for credit provision, which offered mutual benefits to customers and banks alike. The study highlights the adverse impacts experienced during the peak of the pandemic, alongside the subsequent recovery and improvements in the banking and macroeconomic sectors by the end of 2021. Through the use of multiple linear regression analysis, incorporating a COVID-19 dummy variable, the paper investigates the pandemic's impact on the banking sector's stability and its correlation with economic activities. This analysis aims to provide insights into the dynamics between the pandemic crisis and its influence on financial stability through the lens of NPLs, offering valuable implications for policymakers and financial institutions in mitigating similar future risks.

Keywords: non-performing loans; Kosovo; Covid-19; mutliple regression
JEL classification: D00; E00; G21; I18

Paper type: Research article
Received: 24 January 2023
Accepted: 16 March 2023

DOI: 10.54820/entrenova-2023-0008

Introduction

The deterioration of the situation due to the COVID-19 pandemic negatively affected the banking sector, increasing the risk for the banking business and jeopardizing financial stability. This situation led to an increase in credit risk, causing an increase in non-performing loans (NPLs), an increase in loan loss provision, and a decrease in economic activity for 2020. During the pandemic crisis, the banks remained resilient by following the government's instructions for the provision of credit facilities, which had benefits for customers and the banking sector.

The banking sector in the Republic of Kosovo during the pandemic crisis was well managed, although with negative effects. The end of 2021 pointed to improvements in the situation in the banking sector as well as in the macroeconomic sector. The improvement of economic activity had an impact on the improvement of the level of bad loans and the reduction of credit risk as a result of the improvement of the payment ability of customers. This paper aims to analyze the impact of the pandemic crisis on NPLs, which is an important part of financial stability related to economic activity. For this reason, the multiple linear regression with dummy variable COVID-19 was used to analyze the impact of the COVID-19 pandemic on non-performing loans, loan loss provisions, and the nominal GDPs of the Republic of Kosovo.

The first part of the paper contains a review of relevant literature on the impact of crises at the level of NPLs and the country's macroeconomics. The second part contains the formulation of hypotheses and research methodology. As well as the third part, which presents the results of the paper, it is pointed out that the improvement of economic activity leads to the improvement of the level of NPLs, with the improvement of macroeconomic conditions measured in GDP and the level of NPLs decreasing. The growth of NPLs has influenced the growth of loan loss provisions (LLP) to cover bad loans, as well as COVID-19, which has had an impact on the postponement of loan payments, which are reflected in the NPL level. The reason for this could be the application of relief measures. This paper could serve as an enrichment of the literature on the impact of the pandemic crisis on the level of NPLs and economic activity in the Republic of Kosovo.

Non-performing loans

Non-performing bank loans exceed the payment term of 90 days (Bank for International Settlements, 2016; D'Hulster, World, & Group, 2018). According to the research conducted in different countries, several factors are related to the increase or decrease of NPL. Based on research by (Berger & DeYoung, 1997), there is a relationship between credit quality, cost efficiency, and capital where, with the increase of NPLs, we have the reduction of efficient costs, and better cost efficiency affects the reduction of NPLs. Also, banks with low capital are prone to the problem of NPLs. Authors (Altunbas et al., 2000) pointed out that the level of capital has a great influence on the optimal size of the bank and the possibility of financing NPLs, which is used instead of the capital-to-asset ratio for risk monitoring. In agreement with the authors (Danisman et al., 2021), banks with a high level of NPLs and loan loss provisions are more vulnerable and less resilient to the effects of the pandemic.

Economic crises represent a risk to banking stability, which is related to the quality of bank assets because problematic assets affect the growth of NPLs (Radivojevic & Jovovic, 2017; Zeqiraj et al., 2021) as well as the loans' quality as an important part of the bank's assets that affect financial stability (Tran et al., 2022). Authors (Duan et al., 2021) point out that the pandemic has influenced the increase in systemic risk from high loans compared to assets or the increase in liabilities. Research by (Jiang et al.,

2018) revealed that the corrective programme of problematic assets during crises affects the decline of NPLs and financial stability.

The level of lending and non-performing loans is related to the level of short-term deposits and the level of interest on loans (Chang, 2006), with the economic situation and macroeconomic factors as the main determinants of these levels (Achille, 2016). Another important factor in increasing the NPL level is the increase in cost efficiency as a result of poor credit risk management, as well as the conflict between credit managers and owners, a situation that has led banks to failure (Podpiera & Weill, 2008), so management reformulation is needed (Haneef et al., 2012). At the same time, the authors (Laeven & Levine, 2009) showed that there is a positive correlative relationship between the risk taken by banks and the power of shareholders within the bank.

As for the connection between NPLs and their impact on the country's economic activity, even though the pandemic crisis was not a banking crisis, it still involved the cost of the government's intervention to manage the situation through the moratorium, the expansion of government guarantee programmes up to 90% of the value of loans, as well as subsidizing interest-free loans, which increase the fiscal costs of the state by transferring risk from banks to governments (Demirgüç-Kunt et al., 2021). The author (Tran et al., 2022) emphasized that the government's support through public guarantees for credit had a positive effect on the financial stability and risk management of NPLs, resulting in low losses for banks. In this case, the application of the macroprudential stress test for evaluating the efficiency of banks in crisis management should be addressed in the short- and long-term aspects of the promotion of financial stability and the non-interruption of lending that has an impact on macroeconomic development (Bookstaber et al., 2013).

Regarding the macroeconomic effect affecting non-performing loans, the authors (Kozarić & Delihodić, 2020) point out that when a country has a stable NPL level, there is also an increase in lending and GDP, and vice versa (Balgova et al., 2018). In line with the authors' (Bayar, 2019; Makri et al., 2014), in general, microeconomic and macroeconomic factors affect financial stability and the level of NPLs.

The impact of the COVID-19 pandemic on non-performing loans in the Republic of Kosovo

The COVID-19 pandemic has affected the destabilization of the banking system, mainly due to the worsening of the solvency of customers and the weakening of the circulation of businesses that led to the economic decline, which caused asymmetric damage to the macroeconomics of the country (Khairani et al., 2022). However, the situation was well manageable as a resilient banking industry (Berger & Demirgüç-Kunt, 2021) with capital adequacy (T. Beck & Keil, 2021; Kryzanowski et al., 2022).

The results of the stress test for the EU banking system during the years 2021-2023 have increased the demand and supply for loans, while the capital ratio has decreased due to high lending and market losses. Banks with low asset quality have been more exposed to loan losses, reflecting the decline in ROA as a result of COVID-19, which has influenced the decline in GDP, which has had a negative effect on the supply of credit (Budnik et al., 2022).

The pandemic crisis in the Republic of Kosovo has negatively affected financial stability and economic activity, causing a 9.5% drop in the turnover of enterprises. All this has hit the financial performance of economic agents, which has weakened the solvency of customers by increasing credit risk and the level of non-performing loans. The year 2020 was characterized by an increase in the level of non-performing loans from 2.0% to 2.7% compared to 2019. As for health indicators, the coverage ratio with

loan loss provisions has decreased to 139.4%, whereas in 2019, it was 163.5%. The 2020 capital adequacy ratio increased to 16.5% as a result of the capital increase.

In this case, the country's government and the Central Bank of the Republic of Kosovo have undertaken several mitigating measures, among which were failure to reflect late instalments in credit classification, suspension of penalties for late interest payments, a moratorium or postponement of instalment payments for three months and permission or instruction for the restructuring of loans for borrowers in financial difficulties until the end of 2021.

As for the macroeconomic environment (WorldBank.org, 2020), The Republic of Kosovo, for the year 2020, compared to the countries of the region, has had a greater decrease in GDP by 4.5% with an increase in sustainable risk. The year 2021 was marked by an increase in GDP of 5.6%, influencing the improvement of customer credit performance, the reduction of credit risk, and the increase in lending activity. There were also improvements in the level of non-performing loans, with a decrease of 2.3%, returning to the previous situation. The capital adequacy ratio decreased by 15.3% compared to last year, which was 17.4%; the capital ratio remained at 13.6% for risk-weighted assets.

Based on (IMF, 2022), banking performance in Kosovo during the pandemic has been stable, with light difficulties and affordable lending ability to support economic recovery due to liquidity and capital reserves over the years (BQK, 2021).

Methodology

This research aims to analyze the impact of the COVID-19 pandemic on the level of non-performing loans in the banking sector of the Republic of Kosovo and on economic activity. The methodology used in this research is a combination of several scientific methods, such as inductive and deductive methods, methods of concretization and abstraction, methods of comparison, analysis, and synthesis, relevant literature, and content analysis for the research of scientific and theoretical knowledge. Secondary data for this study were gathered from the websites of the International Monetary Fund and the Kosovo Statistics Agency. The data analysis was carried out based on the annual quartiles from 2014 to 2022, with a total of 34 observations for the banking sector and nominal GDP of the Republic of Kosovo. The variables used were non-performing loans, GDP, loan loss provision, nominal GDP, and the dummy variable COVID-19. The purpose of this research was to analyze the impact of GDP, loan loss provision, and the impact of COVID-19 on the level of non-performing loans. Multiple linear regression with a dummy variable was used to analyze the data. The main form of multiple linear regression is as follows:

$$Y = \beta_0 + \beta_1 \cdot x_1 + \beta_2 \cdot x_2 + \ldots + \beta_k \cdot x_k + \mathcal{E} \qquad (1)$$

where Y is the explanatory variable known as non-performing loans in this model, and the independent variables are loan loss provisions, nominal GDP, the dummy variable COVID-19, and $\mathcal{E}$ is the standard error.

Hypothesis Development

The literature, variables, and model of this research are a combination of research by different authors from different countries, which have been used to develop the following hypotheses.

Based on the 2008 crisis, the findings show that there was a negative impact on the increase in the level of NPLs and economic activity (I.M, 2015). Furthermore, the authors'(Ari et al., 2021) experiences show that throughout the 92 crises since 1990, there are similarities in the effects of the crises depending on the states and their

connections with the NPL during the crises and after the crises. However, crises have always influenced the growth of NPLs. Based on this, the main hypothesis is developed:

- ***H0:*** *Non-performing loan level is determined by economic conditions and is affected by crisis occurrence.*

The NPL level is a feature of financial crises, and this level increases more during crises in relation to GDP (Balgova et al., 2018). Authors (Dimitrios et al., 2016; Klein, 2013) revealed that the improvement of macroeconomic conditions has an impact on economic activity and the banking sector, where the high GDP affects the reduction of the level of NPLs as a result of the improvement in the performance of businesses and the paying ability of customers. Based on this, the first hypothesis is developed:

- ***H1:*** *Better macroeconomic conditions measured by GDP lead to a lower NPL level.*

The pandemic period has influenced the increased level of NPLs and credit risk, especially for banks with low capital reserves (Kasinger et al., 2021). Where there is a negative effect on the capital reserves, the quality of the assets, and the recovery ability of the banks (Demir & Danisman, 2021; Yurttadur et al., 2019). Based on this, the second hypothesis is developed:

- ***H2:*** *Higher riskiness of credit placements, as measured by credit loss provisions (reservations), results in a higher level of NPLs.*

The pandemic crisis has caused a weakening of economic activity globally, which has led to the loss of jobs, a decrease in the turnover of enterprises, and a decrease in financial markets, weakening the ability to pay customers, which has led to an increase in the level of (Goodell, 2020; Hardiyanti & Aziz, 2021; Mccaul et al., 2021; Zunić et al., 2021). Based on this, the third hypothesis is developed:

- ***H3:*** *The COVID-19 crisis has pushed back the effect on NPL levels.*

Results

Test of normality

The normality test is applied to determine the distribution of data we have. The data were tested through Shapiro-Wilk and Kolmogorov Smirnov and processed in the SPSS statistical programme. Based on the following results, it is emphasized that the data have a non-parametric distribution, and we can apply the multiple regression test.

Table 1
Test of Normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Non-performing loans (NPL)	0.196	22	0.028	0.849	22	0.003
Loan loss provisions (LLP)	0.253	22	0.001***	0.789	22	0.000***

a. Lilliefors Significance Correction

Note: statistically significant at 1%
Source: Authors` interpretation

The descriptive data are presented below in terms of the number of observations, the mean value, and the standard deviation. The data were calculated for the period from 2014 to 2022 based on annual quartiles.

Table 2
Descriptive Statistics (2014-2022; quartile data)

Variable	N	Mean	Std.Dev.
Non-performing loans (NPL)	34	3.993	2.124
Loan loss provisions (LLP)	34	81.471	10.248
GDP	34	3.334	0.504
Dummy variable COVID-19	34	0.294	0.462

Source: Authors` interpretation

The results of the following analyses present the correlations between the variables (NPL, LLP, GDP, COVID-19), which were tested within the Spearman test. Since the data have a non-parametric distribution, the correlation test is the Spearman correlation.

As one can see below, a positive correlation was found between NPL and LLP (*rho* = 0.644**, *p-value* = 0.001). The increase in LLP is the result of the increase in risk for the level of NPI, which requires coverage of possible losses caused by the pandemic crisis. However, there is a significant negative correlation between NPL and GDP (*rho* = -0.762**, *p-value* = 0.000). With the increase in GDP, we have a decrease in NPL level; this proves that better macroeconomic conditions improve economic activity, the turnover of enterprises, and the ability to pay customers. A negative correlation between NPL and COVID-19 (*rho* = -0.645**, *p-value* = 0.000) has also been observed. Usually, crises have influenced the increase in the level of NPL. This is proven by the negative relationship between NPL and COVID-19, which is caused by the slowdown of economic activity and the deterioration of businesses that have postponed the payment of obligations to clients. On the other hand, we have a strong, significant negative correlation between LLP and COVID-19 (*rho* = -0.863**, *p-value* = 0.000), although the effect of the pandemic and the increase in capital adequacy reserves has been at levels that are not high and are well manageable. Aside from the fact that there is a significant positive correlation between GDP and COVID-19 (*rho* = 0.526**, *p-value* = 0.001), the increased impact of the pandemic has also affected the country's macroeconomics.

Table 3
Correlation Matrix

Correlations			Non-performing loans	Loan loss provisions	GDP	COVID-19
Spearman's rho	**Non-performing loans (NPL)**	Correlation Coefficient	1.000			
		Sig. (2-tailed)	.			
		N	34			
	Loan loss provisions (LLP)	Correlation Coefficient	0.644**	1.000		
		Sig. (2-tailed)	0.001	.		
		N	22	22		
	GDP	Correlation Coefficient	-0.762**	-0.390	1.000	
		Sig. (2-tailed)	0.000	0.073	.	
		N	34	22	34	
	COVID-19	Correlation Coefficient	-0.645**	-0.863**	0.526**	1.000
		Sig. (2-tailed)	0.000	0.000	0.001	.
		N	34	22	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Authors' interpretation

Model Summary

The model shows that 46.2% of the change in the dependent variable (NPLs) can be said to be explained in relation to the independent variables such as (LLP, GDP, and COVID-19).

Table 4
Model Summary (dependent variable NPL and predictors LLP, GDP, and COVID-19)

Model	R	R Square	Std.Error of the Estimate
1	0.578	0.334	0.462

Source: Authors' interpretation

The results of the ANOVA table indicate a strong relationship between NPL and GDP (Table 5).

Table 5
Anova analysis (dependent variable NPL and predictors LLP, GDP, and COVID-19)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	2.138	1	2.138	10.013	0.005[b]
	Residual	4.271	20	0.214		
	Total	6.408	21			
a. Dependent Variable: Non-performing loans						
b. Predictors: (Constant), LLP, GDP, and COVID-19						

Source: Authors' interpretation

According to this Table 6, the level of NPL is more influenced by the level of GDP, which plays an important role in reducing the level of NPL and has a significant impact on economic activity, and vice versa (Table 6), which is in line with the authors (Ahmed et al., 2021; Huljak et al., 2020).

Table 6
Regression coefficients and collinearity statistics (dependent variable NPL and predictors LLP, GDP, and COVID-19)

Model	T-value	Sig.	Collinearity Statistics	
			Tolerance	VIF
(Constant)	6.546	0.000		
Loan loss provisions (LLP)	2.073	0.052*	0.850	1.177
GDP	-3.164	0.005***	1.000	1.000
COVID-19	-1.607	0.125	0.831	1.204

*Note: * statistically significant at 10%; ***1%*
Source: Authors' interpretation

Hypothesis Testing

In the context of two correlation and regression analyses, it has been proven that the good macroeconomic conditions measured by GDP lead to a reduction in the levels of problem loans as a result of the improvement in economic activity, which leads to an improvement in the customers' ability to pay. Based on the Spearman Correlation test, we conclude that a significant negative correlation has been found (rho= -0.762**, p-value =0.000), which means that macroeconomic conditions based on GDP

lead to the reduction of NPL. Also, through regression analysis, we prove that macroeconomic conditions based on GDP have an impact on the reduction of NPLs (T =-3.164, p-value=0.005). In line with the authors (R. Beck et al., 2021; Foglia, 2022), the increase in GDP is the main element that affects the NPL ratio as a result of the increase in economic activity with the increase in income, which leads to the decrease of the NPL, which confirms the hypothesis H1.

The correlation results show that a significant positive correlation was found between LPL and NPLs (rho=0.644**, p-value=0.001). Within the regression analysis, it was found that there are positive effects (T=2.073) but a non-significant p-value=0.052. This connection was expected since crises have an impact on the increase in risk and the level of NPL, which affects the increase of LLP to cover losses, reducing the level of funds available for new loans, which confirms hypothesis H2. The results are in line with (Lamaj, 2023), which states that banks during the pandemic increased the level of LLPs as a result of the increase in NPLs. The increase in risk for banks has influenced the growth of LLP and the weakening of banks' lending capacity (OECD, 2021).

Based on the results of the analysis, it was found that there is a significant negative correlation between COVID-19 and NPL (rho=-0.645** p-value=0.000). Moreover, through the regression test, it was found that there are negative effects (T=-1.607) but a non-significant p-value=0.125. COVID-19 has influenced the postponement of loan payments, affecting the NPL level, which confirms hypothesis H3. There have been lasting negative effects with a moderate level of NPL; the reason for this situation may also be the application of relief measures for clients. The removal of restrictions had an impact on reducing the reported NPL ratio (Mohamed et al., 2021). At the same time, the authors (Kongsamut et al., 2021) emphasize that the relief measures may have an impact on the increase of NPL.

Conclusion

With this research, we tried to find the impact of the COVID-19 pandemic on non-performing loans in the banking sector of the Republic of Kosovo and their relationship with GDP. The level of NPLs in Kosovo until 2020 has been stable and manageable compared to the other countries in the region. However, the pandemic crisis changed the level of NPLs, which for the last six years had been declining (BQK, 2021a; Kosoves, 2016; WorldBank.org, 2020a). Furthermore, the macroeconomic environment in 2020 was characterized by increased risk and credit risk, as well as low stability. The year 2021 saw improvements in terms of the NPL level and GDP.

For this reason, we used multiple linear regression with the use of a dummy variable to see the impact of GDP, loan loss provision, and the impact of COVID-19 on the level of non-performing loans. Based on the results, we found that an improvement in economic activity leads to an improvement in the level of non-performing loans through an improvement in the paying ability of customers. With this, it has been proven that the improvement of macroeconomic conditions as measured by GDP leads to a decrease in the level of non-performing loans. While the increase of NPLs affects the increase of loan loss provision to cover the possible losses of non-performing loans, this relationship has been expected since previous crises have always affected the increase of LLP and NPL, so during the pandemic crisis, we have the same impact as that of this connection. In addition to the COVID-19 crisis, it has had an impact on loan payment postponement, which is reflected in the NPL level. There have been lasting negative effects with a moderate level of NPL; the reason for this situation may also be the application of relief measures for clients during this crisis.

The level of non-performing loans is one of the determinants of banking stability, which is related to financial and economic stability. According to data from the

Central Bank of Kosovo, the NPL level has been stable before and during the crisis, showing improvements as of the end of 2021. The limitation of this study is data from 2023, including a subsequent period of the pandemic crisis, to analyze the level of non-performing loans and its relation to GDP.

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