THE MACROECONOMIC DETERMINANTS OF CREDIT RISK IN THE ALBANIAN BANKING SECTOR

Albina HYSAJ[32]

Abstract:

The Albanian financial system, due to the lack of financial market, development is mainly based on the banking system. The banking system has a decisive role in the financial economy of the country as the banks are the main intermediaries and the main source of financing. Considering its role, the developments and challenges of the banking system are important for the development and soundness of the economy of Albania. The 2007-2008 global financial crisis has shown that the management of banks' risks especially credit risk is very important not only for the national financial system but at the international level as well.

Through an empirical analysis, by employing a multiple regression model, the study aims to investigate the effect of main macroeconomic variables such as unemployment, inflation, lending interest rate, GDP growth rate, and exchange rate on nonperforming loans rate for the period from 2010 until 2022. The data are retrieved from the database of the World Bank and the E-Views software is used to analyze the collected data. The empirical findings of the study imply that the inflation rate, the exchange rate, and the unemployment rate, are significant determinants of the level of non-performing loans. The employed test fails to prove that the GDP growth rate and lending interest rate are significant in determining the rate of non-performing loans. The findings suggest that when the inflation rate increases, the rate of non-performing loans decreases, while when the unemployment rate increases the rate of nonperforming loans increases as well. Moreover, when the Euro becomes more expensive in terms of Albanian Lek, the rate of non-performing loans increases.

Keywords: *credit risk, non-performing loans, macroeconomic*

JEL classification: *C32, E51, G21*

Introduction

The banking system is the main component of the financial system in Albania. Based on the statistics published by the Bank of Albania, bank assets amount to 90% of the overall financial sector assets in 2022 (Q3), with currently 11 banks with foreign and domestic capital operating in Albania (BOA, 2023). As the country still does not have a stock exchange, the banking sector is the main source of financing not only for households but for companies as well.

The value of total loans has increased year by year, reaching a level of about 7.172 billion dollars at the end of 2022. Even though the value of total loans is increasing, the percentage of non-performing loans has decreased in recent years. However, during post-crisis periods, it is noticed a sharp increase in the ratio of non-performing loans.

[32] *Doctor of Philosophy Faculty of Economics and Administrative Sciences, Epoka University, Tirana, Albania. E-mail: albinahysaj@gmail.com. ORCID: 0000-0001-9632-316X.*

Figure 1. shows that non-performing loans have increased following the financial crisis of 2007-2008. Even though Albania does not have a stock exchange and the spillover effect is not direct, as Italy and Greece which are the main economic partners and among the countries of origin with the highest share of FDIs of Albania, suffered severe effects of the crisis, the overall economy and financial sector of Albania are affected from the crisis as well.

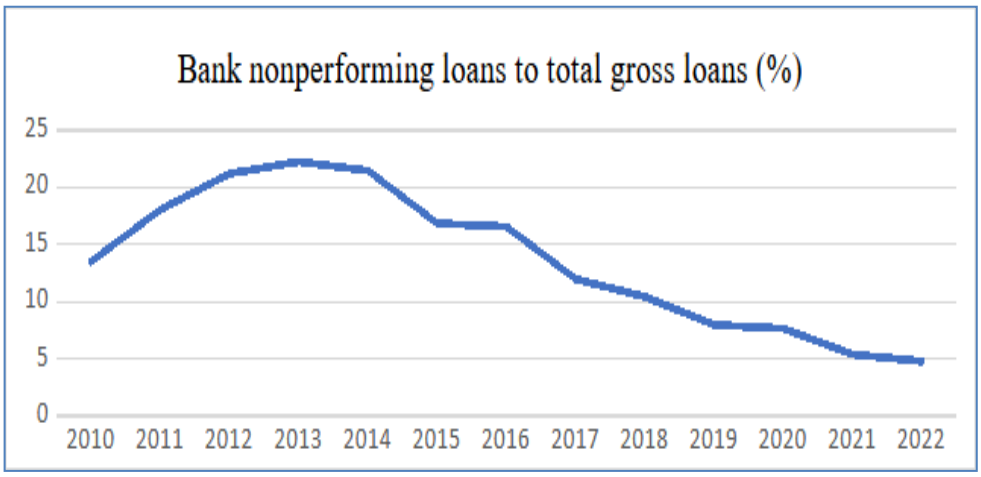

***Figure* 1. Non-performing loans during 2010-2022**

Source: World Bank Data

Figure 2 shows the non-performing loans in Western Balkan countries, Italy, and Greece for the period from 2010 until 2022. The figure shows that there has been a downtrend of non-performing loans starting from 2015 in all countries except Greece because of the severe effects of the last financial crisis in the Greek economy.

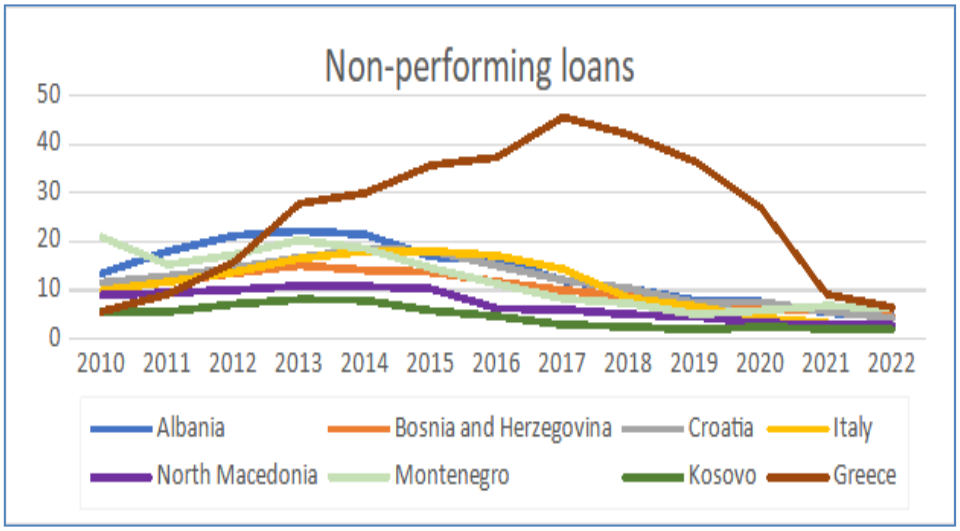

***Figure 2.* Non-performing in Western Balkans, Greece and Italy 2010-2022**

Source: World Bank Data

Gila-Gourgoura & Nikolaidou (2022) investigate the factors determining the credit risk in Albania for the period 1999-2019. They suggest that the Italian debt crisis had a positive impact on bank credit risk, apart from other country-specific factors. Şan (2018) analyses the factors lying behind the increase of nonperforming loans in the Albanian Banks during the recent financial crisis. The study finds that apart from macroeconomic and internal managerial and operational factors, the rise of non-performing loans is explained by the strong economic and social relations that Albania has with Italy and Greece, both countries much affected by the global crises.

The purpose of this research paper is the investigation of the macroeconomic variables that affect the non-performing loan ratio in the Albanian banking system for the period between 2010-2022.

The objective of the study is to identify the effect of each of the chosen macroeconomic variables on the non-performing loans ratio as a proxy of credit risk.

Literature Review

The factors affecting nonperforming loans are divided into two groups, macro factors and micro factors that are related to bank specifics. Naili & Lahrichi (2022) explore the systematic and specific factors that determine the bank non-performing loans in MENA emerging markets from 2000-2019 by using a panel data approach. The empirical results suggest that non-performing loans are determined by macroeconomic factors such as GDP growth, unemployment, inflation, sovereign debt, and specific factors such as bank capitalization, performance, operating inefficiency, ownership concentration, and bank size. Also, Muhammed et al. (2023) analyze the bank-specific and macroeconomic factors that affect non-performing loans in Ethiopia. The authors find that bank-specific factors such as bank size, efficiency, profitability, and capital adequacy positively affect credit risk. Regarding macroeconomic factors, there is a positive relationship between inflation and credit risk, while other factors such as loan growth and currency rates are negatively related to credit risk.

Another study that investigates the bank-specific and macroeconomic factors affecting credit risk in India is conducted by (Antony & Suresh, 2023). The empirical results of panel data modeling suggest that return on equity, bank size, and operational efficiency are negatively related to non-performing loans, while other bank-specific factors such as bank age and ownership type are positively affecting credit risk. While GDP positively affects credit risk, inflation has the opposite effect. Gabeshi (2016) which investigates the determinants of non-performing loans in Albanian banks from 2005 until 2014 by using multiple linear regression finds that credit risk is negatively affected by GDP growth rate, credit growth rate, and share price indices, and positively affected by interest rate, deposit ratio and real exchange rate.

Marouf & Guellil (2017) investigate macroeconomic variables that affect the credit risk in Algeria for the period 1980 until 2014 by using the Ordinary Least Squares and Granger Causality Test. The findings of the study show that factors such as political stability, GDP, financial development, and money supply affect the credit risk in Algerian banks. ALrfai et al. (2022) use panel data regression to analyze the macroeconomic factors influencing credit risk in the Jordanian banking system from 2008 until 2019. They conclude that public debt and remittances increase non-performing loans, whether FDI, tax income, and output gap have the opposite effect. Konstantakis et al. (2016) which use Vector Autoregressive and Vector Error Correction find that during the recession, aside from financial factors, macroeconomic factors such as public debt and unemployment have a significant impact on non-performing loans.

There are many studies that analyze the macroeconomic factors affecting non-performing loans in Albania. Shingjergji (2013) which employs Ordinary Least Squares finds that macroeconomic factors such as GDP growth, foreign exchange rate EUR/ALL, and interest rate affect the level of non-performing loans in Albania for the period from 2005 until 2012. Also Gjini & Koprencka (2018) use simple and multiple regressions to analyze the relationship between macroeconomic variables and non-performing loans in Albania from 2003 until 2016. The authors conclude that the GDP growth rate, interest rate, and unemployment rate negatively impact the non-performing loans. Baholli, Dika, & Xhabija (2015) study the macroeconomic factors that influence non-performing loan rates in Albanian and Italian banking systems by using a simple linear regression model and make a comparison analysis between countries. The findings of their study suggest that the increase in GDP reduces the non-performing loans level, less lending will result in a low level of non-performing loans, while Lek depreciation will increase the non-performing loans level.

Methodology

The literature review suggests that macroeconomic variables are significant determinants of credit risks of banks. Through an empirical analysis, this chapter investigates the macroeconomic variables that determine the non-performing loans in the Albanian commercial banks for the period 2010 until 2022. Based on the literature, this study uses a multiple regression model to analyze the effect of economic growth rate (GDP), inflation rate (INFR), lending interest rate (LIR), unemployment rate (UNEMP) and exchange rate between EUR and ALL (ER)on nonperforming loan rates (NPL), where macroeconomic variables will be the explanatory variables and non-performing loans rate will be the dependent variable. The data for the variables are retrieved from World bank database and Bank of Albania.

The hypotheses that will be tested are:

H1. GDP effect on NPLs is negative

H2. The inflation effect on NPLs is positive

H3. The lending interest rate effect on NPLs is positive

H4. The unemployment effect on NPLs is positive

H5. The exchange rate effect on NPLs is positive

The general regress equation is:

logNPLt = C + b1*logGDPt + b2*logINFRt + b3*logLIRt + b4*logUNEMPt + b4*logERt +μi

In order to have an unbiased model it is important to conduct a series of preliminary tests to address each assumption of the Classical Linear Regression Model. Before continuing with the other test, the stationarity of the series is checked. The stationarity is checked by using the Augmented Dickey-Fuller test statistic. Table 1 gives information regarding the results of this test.

***Table 1*. The estimation of series stationarity**

	t-value	p-value
Log(NPL)	-4.14	0.0008
D(LogGDP)	-2.16	0.0392
D(LogINFR)	-2.84	0.0447
Log(LIR)	-2.7	0.0115
D(LogUNEMP)	-2.43	0.0211
Log(ER)	-2.09	0.0399

Source: Author/ E-views 9

As the time series have less than 30 observations, it is necessary to test if the data are normally distributed by using Jarque–Bera test. The results are shown in Figure 3.

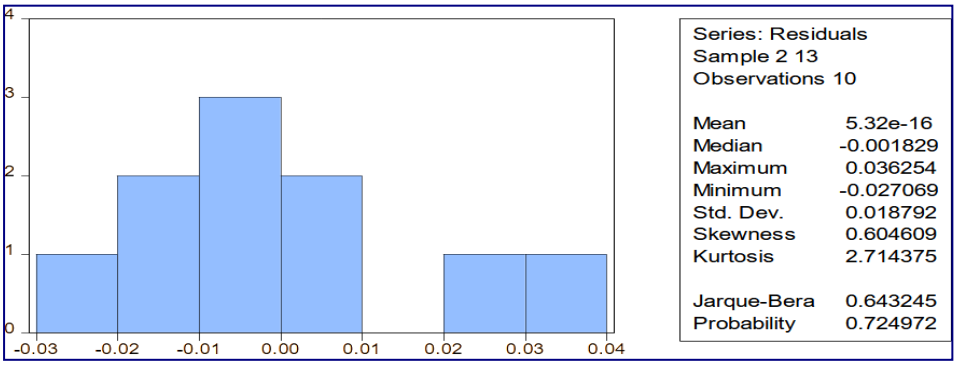

***Figure 3. Histogram* Normality test**

Source: Author/ E-views 9

The probability value is higher than 5%, thus the null hypothesis of the normal distribution of resids can not be rejected.

As the independent variables should not be correlated with each other the multicollinearity test needs to be performed. The correlation matrix is shown in Table 2.

Table 2. **Correlation matrix**

	Log(NPL)	Log(LIR)	D(LogINFR)	D(LogGDP)	Log(ER)	D(LogUNEMP)
Log(NPL)	1					
Log(LIR)	0.66	1				
D(LogINFR)	-0.67	-0.34	1			
D(LogGDP)	0.4	-0.27	-0.13	1		
Log(ER)	0.96	0.66	-0.53	0.46	1	
D(LogUNEMP)	0.55	0.5	-0.22	0.03	0.45	1

Source: Author/ E- views 9

As all values do not exceed the value of 80%, the assumption of no correlation among independent variables is satisfied.

In order to check whether the variability of residuals in this model is constant at different levels of our dependent variable Heteroskedasticity Test Breusch-Pagan-Godfrey is performed and the outcome is shown in table 3.

Table 3. Heteroskedasticity Test output

F-statistic	0.670192	Prob. F(5,4)	0.6688
Obs*R-squared	4.558533	Prob. Chi-Square(5)	0.4721
Scaled explained SS	0.625203	Prob. Chi-Square(5)	0.9868

Source: Author/ E-views 9

As the value of probability is higher than 5% the null hypothesis of no heteroskedasticity cannot be rejected, thus the assumption of homoskedasticity is satisfied.

The last assumption is related to the lack of serial correlation of residuals. To check whether there is serial correlation or not Breusch-Godfrey Serial Correlation LM Test is performed as can be views in Table 4. As the value of probability is higher than 5% the null hypothesis of can not be rejected.

Table 4. Serial Correlation LM Test

F-statistic	1.45461	Prob. F(2,2)	0.4074
Obs*R-squared	5.926033	Prob. Chi-Square(2)	0.0517

Source: Author/ E-views 9

Empirical findings

The results of the equation are displayed in Table 4. As shown in the table, the independent variables explain 99% of the variation of non-performing loans, while R square has a slight difference with R. Furthermore, the probability of F statistic is close to zero, indicating that the statistical significance of the model. Regarding the significance of independent variables, the probabilities of the independent variables show that variables such as inflation rate, exchange rate, and unemployment are significantly affecting the rate of non-performing loans. However, the probabilities of lending interest rates and GDP growth rate are higher than five percent, indicating that those variables are not statistically significant.

Table 5.

Regression results

Source: Author/ E-views 9

Dependent Variable: LOGNPL				
Method: Least Squares				
Variables	**Variables coefficients**	**Std. Error**	**t-Stat**	**Prob.**
LOG(LIR)	-0.05089	0.24099	-0.21115	0.843
D(LOGINFR)	-0.22246	0.054	-4.11946	0.015
D(LOGGDP)	-0.01293	0.11587	-0.11159	0.917
LOGER	6.566824	1.16639	5.630028	0.005
(LOG_UNEMI	0.788626	0.25705	3.068049	0.037
C	-12.7696	2.29622	-5.56113	0.005
R-sqrd	**0.992581**			
Adj R-sqrd	0.983308			
F-stat	107.033			
Prob(F-stat)	0.000239			

Based on the results of the regression, the first hypothesis regarding the effect of GDP growth rate on and lending interest rate on non-performing loans, cannot be accepted as the test proves that the relationship is not significant. The results indicate an inverse relationship between the inflation rate and the non-performing loans rate. Even though the second hypothesis cannot be proved, the results are in line with (Anita, et al. 2022; Antony & Suresh, 2023) which also suggest a reverse relationship between inflation and non-performing loans.

The test proves a positive relationship between the unemployment rate and the exchange rate, indicating that the fourth and fifth hypotheses can not be rejected. The results suggest that increased unemployment and the higher price of Euro in terms of Albanian Lek will increase the non-performing loans ratio. The results are in line with the theoretical expectations and findings of other authors such as (Gabeshi, 2016; Baholli, Dika, & Xhabija, 2015; Akinlo & Emmanuel, 2014).

Conclusions

The banking system in Albania has a significant role in the financial economy and it has a huge contribution to the economic and financial development of the country. The lending activity of the banks is the main source of financing in Albania and other countries that do not have financial markets. Based on the crucial role of the banking system and banks, risk management, especially credit risk is very important, taking into consideration the genesis of the last financial crises and the way it went worldwide through the financial system.

This research paper analyses which are the macroeconomic factors that influence the credit risk in the Albanian Banking system for the period from 2010 until 2022, by using annual data retrieved from the database of the World Bank. The findings of empirical analysis suggest that macroeconomic variables such as the inflation rate, unemployment rate, and exchange rate are significant determinants of non-performing loans in Albania. The tests imply a positive relationship of non-performing loans with the unemployment rate, and exchange rate and a negative relationship among inflation and non-performing loan rate. The findings suggest that the central bank and its policies are very important in the management of credit risk.

The limitation of this study is the short period considering that data are annual. However, this study contributes to the literature and can serve policymakers, banks, the central bank, and other regulatory institutions.

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