THE USV ANNALS OF ECONOMICS AND PUBLIC ADMINISTRATION | VOLUME 25, ISSUE 1(41), 2025

https://doi.org/10.4316/aepa.2025.25.1(41).169-179

ACCOUNTING VALUATION AND CREDIT RISK MANAGEMENT: AN ECONOMETRIC ANALYSIS OF NON-PERFORMING LOANS IN THE ROMANIAN BANKING SYSTEM

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Received 31 March 2025; Accepted 19 June 2025

Abstract:
This paper investigates the factors influencing the evolution of non-performing loans in the Romanian banking system and aims to develop an econometric model based on quarterly data from 2014-2024. Among the variables analyzed, return on assets and unemployment rate are the most influential factors in the evolution of the non-performing loan (NPL) rate, suggesting a direct link between economic performance, labor market dynamics and loan portfolio quality. In contrast, inflation has a minor impact. The study also traces the accounting transition from the incurred loss model (IAS39) to the expected loss model (IFRS 9), showing that the implementation of IFRS 9 has contributed to a reduction in the NPL ratio, demonstrating increased efficiency in credit risk management.

Key words: non- performing loans, credit risk management, rate of return on assets, return on equity, banks,

JEL classification: C33, G21, G32, M41

1. INTRODUCTION

The bank loan is an essential component of economic activity, functioning as a financial intermediation mechanism between banks and borrowers. This contractual relationship implies mutual trust and financial responsibility on both sides. Over time, credit has supported the smooth functioning of the economy by facilitating consumption, stimulating investment and encouraging entrepreneurship. However, not all credit relationships evolve as expected. The failure of borrowers to meet their contractual obligations leads to the emergence of non-performing loans, with negative effects throughout the economy. A high volume of non-performing loans reduces bank profitability through the need to set aside provisions to cover loan risks, erodes own funds and restricts the financing capacity of the real economy. In the long run, the accumulation of these loans can generate systemic risks, credit contraction and pressure on monetary policies. At the macroeconomic level, the effects can materialize in the form of slowing economic growth, rising unemployment and reduced investor confidence, in some cases requiring government intervention, with significant implications for public budgets and macroeconomic stability.

In this context, International Financial Reporting Standards (IFRS) play a fundamental role in the accounting approach to credit risk and the management of non-performing loans. IFRS 9 has revolutionized the way credit risk is recognized, moving from an incurred-loss model to one based on the recognition of expected losses, which requires the estimation of risk at the point of origination. This forward-looking approach improves credit risk management, reducing the accumulation of non-performing loans, and mitigating their negative impact on the financial position and increasing transparency in financial reporting.

Although there are many studies on the determinants of non-performing loans, few of them focus on the specifics of the Romanian banking system and use recent data. In an economic context marked by post-pandemic instability and the conflict in Ukraine, an in-depth analysis is needed, reflecting the structural particularities and structural vulnerabilities of the Romanian banking system. Understanding the relationships between endogenous and exogenous factors influencing the accumulation of non-performing loans is all the more important in the wake of the post-COVID-19 macroeconomic changes.

The aim of the paper is to analyze the extent to which macroeconomic indicators and the financial performance of Romanian banks influence the quality of the loan portfolio, as expressed by the NPL ratio. At the same time, the research aims to substantiate recommendations to improve credit risk management, with a special focus on the evaluation of the transition from the accounting framework based on incurred losses (IAS 39) to that based on expected losses (IFRS 9), assessing the impact of these models on financial stability and forecasting policies. To achieve these objectives, the study combines theoretical research with empirical analysis in order to develop an econometric model to identify the main variables affecting the evolution of non-performing loans.

The study utilizes quarterly statistical data reported by the National Bank of Romania, the National Institute of Statistics and the Ministry of Labor on: non-performing loans rate, return on assets, return on equity, unemployment rate and inflation rate, for the period September 2014 - June 2024. The article is organized in four sections: section two presents the theoretical framework, section three describes the methodology and variables used and the results obtained, and section four presents the main conclusions of the study and their implications.

2. LITERATURE REVIEW

Non-performing bank loans are a key indicator of economic development, given the central role of banks in financing both the public and private sectors. The lending process involves, in addition to earnings, the assumption of credit risk, generated by the inability of some loans to remain performing over the entire contractual term (Celik, 2019), either due to successive late payments or non-collection of the amounts due. The increase in non-performing loans reduces banks' ability to extend new credit, reducing liquidity, erodes profitability by increasing operating costs, and weakens customer confidence (Goyal, Singhal, Mishra, et al., 2023).

Romania is a relevant case for analyzing non-performing loans in the post-IFRS 9 period, as it has gone through many important changes. Since 2012, credit institutions in Romania have been applying IFRS-compliant accounting regulations, integrating transparency, relevance and comparability requirements. The implementation of IFRS 9 on January 1, 2018 overlapped with the strengthening of the national regulatory framework and the efforts of the National Bank of Romania to align with international standards, in particular with regard to capital adequacy and risk management.

The analyzed range 2014 - 2024 is justified both methodologically and contextually. The year 2014 marks a high level of non-performing loans in Romania (around 22%), providing a relevant benchmark for assessing the quality of the loan portfolio. The period includes the introduction of IFRS9, as well as two overlapping crises: the COVID-19 pandemic (2020-2022) and the geopolitical crisis caused by the conflict in Ukraine (2022), both with possible effects on borrowers' repayment capacity and credit loss recognition policies. The chosen period thus provides an opportunity to analyze the long-term effects of accounting reform and the ability of the banking system to absorb risks through early recognition of loan losses.

Until the introduction of IFRS 9, bank asset quality was difficult to assess on a comparable basis in the absence of an explicit definition of non-performing loans. Bholat et al. (2016) proposed a comprehensive framework for classifying and recognizing NPLs, highlighting the importance of adopting policies that allow for early recognition of losses. According to them, if these loans are not managed effectively, they may end up affecting the stability of the entire financial system. IFRS (IFRS) addresses this gap by providing a model focused on the recognition of expected credit losses (ECL), in contrast to the approach under the old IAS 39, where losses were recognized only after there was a clear indication of impairment. The ECL model, introduced by IFRS 9, is based on a three-stage classification of assets according to the level of credit risk deterioration. Stage 1 includes non-performing, low credit risk assets for which provisions are made for expected losses over the next 12 months. Stage 2 comprises assets for which there has been a significant increase in credit risk, although they are not yet non-performing, with expected losses estimated over the lifetime of the asset. Stage 3 includes assets considered as non-performing, for which the risk of

default is high and credit institutions are required to fully provision for expected losses. In order to mitigate the impact on the balance sheet, some credit institutions opt to outsource their NPL portfolios. In this respect, Kasinger et al. (2021) emphasize the importance of developing a European NPL market that allows for sales at realistic prices. The authors point out that such a mechanism would help banks to reduce their provisioning levels, and redirect their resources towards profitable assets, which would improve credit risk management and financial stability. The application of the early loss recognition model has been shown to increase provisions (Grosu et al, 2024), while improving the ability of institutions to absorb losses without affecting solvency (Ghiță-Mitrescu and Duhnea, 2015). In addition, Balakrishnan and Ertan (2021) also demonstrate that public credit registers (PCRs) facilitate early risk recognition by providing information about borrowers' track record. Al-Nsour and Abuaddous (2022) investigate the impact of IFRS 9 on performance, solvency and capital adequacy ratio and non-performing loans for 53 Gulf Cooperation Council (GCC) banks. Their study confirms that after IFRS 9 was implemented, banks experienced significant increases in loan loss provisions, including non-performing loans, without substantially altering financial performance indicators, solvency. In order to trace even more precisely the impact of the introduction of IFRS 9 on banks' performance, Ricapito (2024) conducted a comparative analysis of European banks' performance under IAS 39 vs. IFRS 9 accounting regimes, highlighting important changes in risk management and internal control practices. In order to maintain systemic stability, the European Banking Authority (EBA) introduced in 2019 a framework for the effective management of non-performing loans to act as an early warning and early intervention tool. Exceeding the critical 5% NPL ratio threshold requires the development of a plan to reduce non-performing loans.

The economic literature identifying the significant determinants of non-performing loans (NPLs) has developed considerably in recent years, highlighting a variety of macroeconomic and banking system-specific factors. Empirical studies conducted in various countries converge on relevant variables such as: gross domestic product (GDP), unemployment rate, inflation, foreign exchange rate and internal management indicators such as: return on assets (ROA), return on equity (ROE). For example, Tanasković and Jandrić (2015), in an analysis applied to Central, Eastern and Southern European countries, found that the decline in GDP and high level of foreign currency loans are positively correlated with an increase in NPLs. In Turkey, Vatansever and Hepşen (2013) showed that ROA and GDP were the most important predictors of credit risk. Vaicondam et al. (2019) analyzed the effects of inflation rate, unemployment rate, and interest rate on NPLs of Malaysian banks from 2009 to 2018, concluding that interest rate and unemployment rate significantly influence the level of NPLs, while inflation has limited influence.

For Western Europe, Katsampoxakis and Basdekis (2022) identify unemployment and borrowing costs as significant factors in explaining NPLs in ten European economies (Italy, Germany, Ukraine Spain, France, Austria, Greece, Netherlands, Portugal, Belgium, Germany, Ukraine, France, Austria, Greece, Netherlands, Portugal and Belgium) over the period 2005-2019. The authors conclude that deteriorating labor market conditions have a direct and significant effect on the borrower's financial behavior. In Pakistan, the study by Hassa et.all (2022) shows a positive correlation between the volume of non-performing loans and macroeconomic variables such as unemployment and inflation, emphasizing the importance of economic stability and effective governance in maintaining the quality of the loan portfolio. In Nepal, Singh, Basuki, and Setiawan (2021) emphasized that return on assets (ROA) and bank size are important predictors of loan portfolio quality, unlike capital adequacy ratio which was found to be statistically irrelevant. In Nigeria, Ijuwo (2024) examined the impact of non-performing loans on credit risk management in the model of three banks over the period 2008-2022, finding significant relationships between non-performing loan ratio, leverage and firm size with implications for the stability and resilience of the banking system. In Indonesia, Wijoyo and Apriyani (2024) find that factors such as the global financial crisis and the increased level of competitiveness in the banking sector contribute to the deterioration in loan portfolio quality.

Pop, Chicu and Răduț (2018), in a study applied on five commercial banks (BCR, BT, BRD, Raiffeisen and UNICREDIT), identified that, in the case of Romania, the unemployment rate is the most relevant factor influencing non-performing loans, while ROE does not have robust statistical significance. Similar conclusions are also found in other papers (Vogiazas and Nikolaidou, 2011, Hada et al., 2020) applied in Romania, which confirm the direct link between labor market dynamics and borrower's payment behavior. Although unemployment is a key factor, other studies highlight complex interactions between general economic conditions and credit risk in Romania. For example, Mașcu and Pescu (2014) show that, over the period 1997-2014, non-performing loans were significantly influenced by real interest rate and GDP growth rates, suggesting that economic developments generate direct pressures on the quality of the loan portfolio. This relationship is also confirmed by the study by Moinescu (2012), who, analyzing Central and Eastern European economies, emphasizes the role of GDP growth as a key macroeconomic variable in determining the level of non-performing loans.

Overall, the literature suggests that the level of non-performing loans is sensitive to macroeconomic conditions and the unemployment rate is the most significant indicator associated with credit risk. In contrast, the erosion of purchasing power, as measured by inflation, remains controversial and dependent on both the national context and monetary policies.

Our study is part of this theoretical framework, proposing an extension of the previous analysis by estimating an econometric model applied on Romania, over the period 2014-2024, in order to validate the relationships identified in the literature and to analyze the differential impact of each variable on NPL.

3. METHODOLOGY, VARIABLES AND RESULTS

A multiple linear regression model was used to identify the determinants of credit quality in the Romanian banking system over the period 2014-2024. The analysis was performed on the basis of quarterly data series extracted from official sources, namely the National Bank of Romania (NBR) and the National Statistical Institute (NSI), which ensure the quality and accuracy of the information used. The choice of this statistical method was motivated by the need to capture the simultaneous effects of several explanatory variables, both internal (banks' financial performance) and macroeconomic (general economic conditions), on a complex phenomenon - the non-performing loans of banks.

The model constructed has as dependent variable the non-performing loan (NPL) ratio, considered as the main indicator of loan portfolio quality. The selected independent variables, taking into account the results of the studies researched in the review literature (Vatansever and Hepșen, 2013; Singh et al, 2021; Katsampoxakis and Basdekis, 2022), were return on assets (ROA), return on equity (ROE), unemployment rate (rs) and inflation rate (ri).

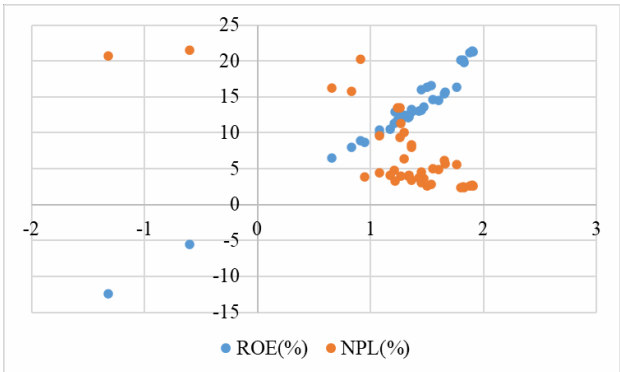

Figure 1. Scatter plot of ROE and NPL as a function of ROA

Source: author's contribution

Prior to estimating the regression model, a preliminary assessment of the relationships between the selected variables was carried out to examine their distribution and possible initial correlations. Two scatter plots were developed. For this purpose, a diagonal scatter plot was first used, which captures the simultaneous distribution of the non-performing loan (NPL) ratio and return on equity (ROE) as a function of return on assets (ROA) (see Figure 1).

Figure 1 shows how ROE and NPL are correlated as a function of ROA and highlights a strong linear relationship between ROA and ROE, while the distribution of NPL ratios appears random, with no clear trend in relation to ROA. In view of the high structural correlation between ROA and ROE, we opted to keep a single variable in the model to reflect bank performance in order to avoid the distorting effects of multicollinearity. ROA was retained in the final model, as it provides a more direct measure of efficiency in asset utilization and is less influenced by the bank's capital policy than ROE.

The correlation between the unemployment rate, the inflation rate and the level of non-performing loans has been analyzed visually in Figure 2.

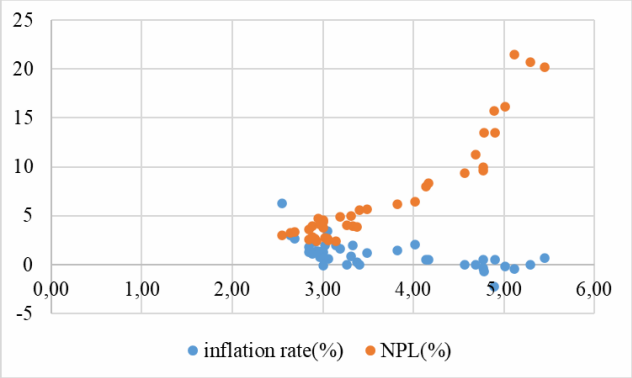

Figure 2. Scatter plot of inflation rate and NPL as a function of unemployment rate
Source: author's contribution

Figure 2 shows the distribution of values for inflation rate and NPLs as a function of unemployment rate and confirms a positive association between unemployment rate and the level of NPLs. In contrast, the inflation rate does not show a clear relationship with unemployment, suggesting that this indicator may play a secondary role in explaining the variation in non-performing loans. Given these results, we have opted to retain both macroeconomic indicators as predictors of NPLs.

These independent variables selected to explain the behavior of the NPL ratio in Romania include both endogenous factors specific to banks' internal performance and exogenous factors reflecting the macroeconomic conditions in Romania.

a. Variables

The quality of loans granted by credit institutions is directly reflected by the evolution of the non-performing loans ratio, a standardized indicator for assessing credit risk. According to the European Central Bank's definition, a loan is considered non-performing when it is more than 90 days past due. In Romania, the non-performing loan ratio is calculated according to the methodology of the European Banking Authority (EBA) according to formula 1:

$$Non-performing\ loan\ rate = \frac{Non-performing\ loan\ and\ granted\ advances\ value}{Total\ loans\ and\ granted\ advances\ value} \quad (1)$$

A higher NPL ratio indicates a deterioration in repayment discipline and increased risk exposure, while a low NPL ratio indicates a healthy portfolio and high efficiency of lending policies.

Return on Assets (ROA) assesses the bank's ability to generate profit through the efficient use of assets. Higher ROA values reflect that the bank has managed its banking business well with low risk of non-performance. We expect an increase in ROA to lead to a decrease in the non-performing loan ratio.

The unemployment rate (rs) indicates general labor market conditions. A high level of unemployment reflects difficulties in the labor market, reducing the ability of borrowers to meet their financial obligations to the bank, thus contributing to the increase in non-performing loans. Even though the unemployment rate in Romania has been decreasing over the period analyzed, the hypothesis remains valid: an increase in unemployment is expected to positively influence the NPL ratio.

The inflation rate (ri) affects borrowers' purchasing power and real incomes. In the contractual context of loans, high inflation can lead to repayment delays or even default. We expect high inflation to have the effect of increasing the NPL ratio.

$$NPL = \alpha + \beta_1 ROA + \beta_3 rs + \beta_4 ri + \varepsilon$$

The coefficient estimates were obtained by the least squares method using IBM SPSS Statistics version 26 software.

The main research hypotheses are:

H1: Is there a negative relationship between the return on assets (ROA) and the non-performing loans rate?

H2: Is there a positive relationship between the unemployment rate and the level of non-performing loans?

H3: Is there a positive relationship between the inflation rate and the level of non-performing loans?

H4: The transition from IAS 39 to IFRS 9 leads to a significant decrease in the median NPL ratio

b. Results, parameter estimates and model validation

The first statistical results provide an overview of the distribution of the variables analyzed in the regression model over the entire period 2014-2024 and are presented in Table 1.

Table 1. Descriptive statistics

Variable	Mean value	Std. Deviation	Minimum value	Maximum value
NPL	7,0747	5,44645	2,37	21,47
ROA	1,2760	0,60300	-1,32	1,91
Rs	3,6528	0,88306	2,55	5,45
Ri	1,0775	1,40576	-2,2	6,3

The descriptive statistical results show significant variations between quarters. The average level of non-performing loans (NPLs) of 7.07% indicates the existence of a constant credit risk in the Romanian banking system, while the maximum value of 21.47% suggests that the Romanian banking system has experienced episodes of financial stress in certain periods, characterized by economic instability, deterioration of repayment capacity, liquidity pressures and increased forecasting costs. ROA registered a minimum negative value of -1.32%, indicating episodes in which some Romanian banks failed to capitalize on their assets in some quarters. The maximum ROA was 1.91%, reflecting a relatively good economic performance in the most favorable quarters. The unemployment rate (rs) averaged 3.65%, with values ranging from 2.55% to 5.45%. These data confirm a general downward trend of unemployment in Romania during the period under analysis, reflecting a progressive stability of the labor market. The inflation rate (ri) averages 1.08%, but the standard deviation of 1.41% indicates an increased volatility in the general price level. Values ranged from -2.2% to 6.3%, reflecting the influences of external events, such as the

effects of the energy crisis or post-pandemic imbalances, with possible implications on the purchasing power and payment behavior of borrowers.

The strong correlation between the independent variables and the NPL ratio is shown in Table 2.

Table 2. Model Summary Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,965	0,932	0,926	1,47709	1,096

a. Predictors: (Constant), Inflation rate (%), ROA (%), Unemployment rate (%),
b. Dependent variable: NPL (%)

R coefficient indicates a very strong correlation between the independent variables (ROA, rs, ri) and the non-performing loan (NPL) rate. Coefficient of determination (R^2) of 93.3% that the variables included in the model explain almost entirely the variation in NPLs. Durbin-Watson is close to 2, suggesting that there is no significant autocorrelation in the residual data.

The overall significance of the model is indicated by the statistical results presented in Table 3.

Table 3. ANOVA test results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1078,344	3	359,448	164,748	0,000
	Residual	78,545	36	2,182		
	Total	1156,889	39			

a. Dependent variable: NPL (%)
b. Predictors: (Constant), Unemployment rate (%), ROA (%), Inflation rate (%)

The F value of 164.748 and an associated significance level (p≤00001), confirms the overall validity of the model and reveals that at least one of the independent variables has a statistically significant impact on NPL.

The results of the Coefficients table (Table 4) provide a picture of the relationships identified by the multiple linear regression model estimated to explain the non-performing loans (NPL) rate in Romania.

Table 4. Coefficients table results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence interval for B	
		B	Std. Error				Lower Bound	Upper Bound
1	(Constant)	-5,860	2,056		-2,892	0,006	-9,969	-1,751
2	ROA (%)	-2,964	0,494	-0,328	-6,005	0,000	-3,966	-1,963
4	Unemployment rate (%)	4,560	0,407	0,739	11,195	0,000	3,734	5,386
5	Inflation rate (%)	0,055	0,218	0,014	0,252	0,802	-0,388	0,498

a. Dependent variable: NPL (%)

The results in Table 4 highlight the relationships estimated by the multilevel linear regression model used to explain the NPL ratio in Romania, over the period 2014-2024. Two of the three independent variables analyzed: return on assets (ROA) and unemployment rate (rs) show a statistically significant influence, with sig. below the conventional threshold of 0.05. Thus, the results obtained by estimating the econometric model allow testing the hypotheses formulated in Section III. Methodology.

The first hypothesis (H1), which predicts a negative relationship between the return on assets (ROA) and the level of non-performing loans, is validated by the negative (B = -2.964) and

statistically significant (sig.=0.000) coefficient. This result indicates that banks that utilize assets efficiently and achieve high ROA tend to have a healthier loan portfolio, decreasing credit risk. The conclusion is supported by the literature, including studies by Singh, et al. (2021) and Vatansever & Hepşen (2013).

The second hypothesis (H2), which predicts a positive relationship between the unemployment rate and the NPL ratio, is also confirmed. The estimates show that the unemployment rate has a positive (B = 4.56) and significant (sig.= 0.000) effect on non-performing loans, indicating that as more people lose their jobs, their ability to repay their contracted loans decreases, which affects the quality of the loan portfolio. The result is in line with empirical observations from regional (Pop, et al., 2018) and international studies (Vaicondam et al, 2019; Shan et al, 2021; Hassan et al, 2022).

On the other hand, the third hypothesis (H3), concerning the existence of a positive relationship between the inflation rate and the level of non-performing loans, is not confirmed. The estimated coefficient for the inflation rate (B = 0.055) is not statistically significant (sig.= 0.802), indicating that price changes did not directly influence the risk of default during the period analyzed. This finding is in agreement with the results obtained by Katsampoxakis & Basdekis (2022) and in disagreement with the results obtained by Hassan et al (2022). This result can be explained by mitigating the effects of inflation through monetary policies, wage adjustments or control of financing costs. This partial validation of the hypotheses contributes to the identification of the internal and macroeconomic factors that influence the accumulated non-performing loans in the Romanian banking system over the last decade, and the model confirms the crucial role of economic performance and social context in explaining credit risk in the Romanian banking system.

4. IMPLICATIONS OF THE TRANSITION FROM IAS 39 TO IFRS 9 ON CREDIT RISK MANAGEMENT

The implementation of IFRS 9 has represented a substantial change not only in the accounting approach to credit risk, but also in its management. According to IFRS 9 (B5.5 and B5.7), credit institutions are required to assess deterioration in credit quality at an early stage, using an extensive set of macroeconomic information, alternative scenarios, early warning indicators and statistical models for estimating ECL. This requirement has led to a profound transformation of credit risk management strategies by integrating these early warning indicators, predictive models and statistical parameters into internal credit risk assessment and monitoring processes. Thus, IFRS 9 recommendations have been implemented by adopting an operational framework to identify risky exposures based on historical data and economic scenarios, assess the probability of default using statistical models and forecasts and classify exposures into the three stages, mitigate risk through effective lending and provision recognition measures and continuously monitor the quality of the loan portfolio.

Based on these theoretical considerations, we set out to assess the impact of the transition from the IAS 39 loss recognition model to IFRS 9, a comparative analysis was performed between the two periods: 2014 -2017 (IAS 39) and 2018-2024 (IFRS 9). In order to capture the central changes in variables between the two accounting regimes, the comparative analysis was carried out based on median values, avoiding distortions caused by statistical extremes and consistently reflecting the characteristics of the distribution in each period. (see Table 5)

Table 5. Evolution of medians of variables before and after implementation of IFRS 9

Variable	Mean value		Median value		Std. Deviation		Minimum value		Maximum value	
	IAS 39	IFRS 9	IAS 39	IFRS 9	IAS 39	IFRS 9	IAS 39	IFRS 9	IAS 39	IFRS 9
NPL	8,1464	15,0558	12,4050	3,80499	7,64849	3,71770	-12,45	8,66	12,91	21,34
ROA	13,1650	3,7954	1,25	1,48499	5,02427	,21426	6,41	2,37	21,47	6,16

Rs	4,7543	3,0596	4,775	3,0	0,42060	0,05516	4,02	2,55	5,45	3,82
Ir	0,71	1,619	0,0	1,4	,9384	,2596	-2,2	-,1	2,1	6,3

Table 5 highlights the comparative analysis of median values for financial and macroeconomic variables and reveals significant differences between the accounting regime applied under IAS 39 and IFRS 9. The median non-performing loan ratio decreased from 12.4% to 3.8%, reflecting more effective policies in the early identification and management of loan losses, by strengthening models to estimate expected losses and intensifying the monitoring of potentially risky customers. Return on Assets (ROA) increased slightly from 1.25% to 1.48%, indicating banks' increased efficiency in asset pricing, but also a prudent approach to credit risk by reducing risk appetite. The median unemployment rate decreased from 4.8% to 3%, indicating an increasing capacity of the Romanian economy to absorb labor, directly contributing to the reduction in the volume of non-performing loans. In contrast, inflation rose from 0% to 1.4%, which may indirectly influence borrowers' repayment behavior. Despite the provisioning pressure imposed by IFRS 9, banks have managed to maintain their asset performance, with this growth showing that ROA is becoming sustainable, even in an environment of increasing risks.

The results of the analysis support the hypothesis (H4) that the transition from the realized loss model (IAS 39) to the expected loss model (IFRS 9) has led to a strategic reorganization of credit risk management. This transition has enhanced the ability of banking institutions to detect deterioration in credit quality early, reduce systemic risk and protect the level of own capital, transforming IFRS 9 from a mere accounting standard into a catalyst for reform in credit risk management.

5. CONCLUSIONS

Non-performing loans are an important indicator of the financial health and stability of banks, having a direct impact on their profitability, liquidity and solvency. A high level of NPLs affects a bank's ability to optimally carry out its core business, putting pressure on capital resources and limiting the financing capacity of the economy. Maintaining a low NPL ratio is therefore essential for the sustainability of banking activity. A bank that effectively manages credit risk can maximize interest income and allocate additional resources to new lending, supporting economic growth. Conversely, excessive accumulation of non-performing loans requires additional provisioning, eroding capital and affecting performance indicators. In cases a. Thus, the negative impact of non-performing loans is not limited to banks' profitability, but manifests itself on the entire economic activity of a country. Thus, as the portfolio of non-performing loans increases, banks become much more careful and prudent when granting new bank loans to ensure that they avoid the risk of default, as excessive accumulation can even lead to insolvency when they cannot cover their losses from provisions and capital reserves. Inevitably, the customers of the institution in question will also act to "rescue" the money deposited in their deposits, leading to liquidity shortages and hence the idea of economic collapse.

Often, a bank cannot anticipate what difficulties will occur in the future both economically and individually, and thus we can say that although it has different strategies for risk assessment, they inevitably occur. In this respect, the non-performing loan ratio indicator is a percentage value used by banks to measure the quality and efficiency of their loan portfolio. It refers to the percentage of loans that are not repaid within a period of at least 90 days as a percentage of total loans.

The study investigated the relationship between macroeconomic factors (unemployment rate and inflation rate) and asset performance (measured by ROA), on the one hand, and the non-performing loan (NPL) ratio, on the other hand, in the Romanian banking system, over the period 2014-2024. The data obtained from running the multiple linear regression model confirm that the NPL ratio and ROA are the strongest and most significant predictors of the change in NPLs, reflecting the vulnerability of the quality of the loan portfolio to both labor market conditions and to the own policies of efficient management of the resources attracted by investing them in

profitable and qualitative financial instruments. These results suggest that banks, when assessing credit risk, should also take into account the analysis of social risks, especially those associated with unemployment. Banks should therefore include labor market dynamics in their internal lending and provisioning policies. At the same time, the rigorous application of IFRS 9, through the use of the expected loss model (ELC), allows the anticipation of deterioration in credit quality and supports banks in managing credit risk dynamically. IFRS 9 introduced a dynamic and proactive approach, which encourages the anticipation of credit risk, whereas IAS 39 was more reactive, relying on the recognition of losses already realized.

The main contribution of the paper consists in the econometric study of the determinants of the non-performing loans rate in Romania, in the context of the economic developments of the last decade. By identifying the significant and insignificant relationships between the variables analyzed, the study provides an updated and relevant perspective on non-performing loans, with relevant implications for the banking sector, the banking industry, investors and even customers. The novelty of the research stems from its focus on the relationship between the non-performing loan ratio, unemployment and return on assets (ROA), aspects less emphasized in the domestic literature. Moreover, by covering a time period, 2014-2024, which includes both the pre- and post-pandemic intervals, the paper allows for a thorough understanding of how the two overlapping crises influence credit risk. We also find a direct link between the accounting transition and the reorganization of bank risk management policy. The introduction of IFRS 9 has significantly changed credit risk management, moving credit institutions towards a forward-looking, dynamic and structural model.

The research was limited by the sample size as the data collected was only available for a certain time period. We believe that this constraint regarding the quantitatively small data may influence the generalizability of the conclusions. However, even under these conditions, the results provide a clear picture of the major trends and allow the formulation of working hypotheses for future research.

In conclusion, our study proves to be topical and important because bank lending plays an important role in the smooth functioning of banking and financial stability, and non-performing loans lead to negative effects for the economy and banks. Therefore, it is necessary for banks to adopt dynamic credit risk management models linking labor market dynamics (unemployment rate) with own performance indicators (OI). A simultaneous deterioration of the two parameters should trigger preventive measures on provisioning policy and lending decisions in real time. At the same time, early recognition of credit losses allows for a pre-emptive response, which improves bank resilience, enhances investor and supervisory confidence.

BIBLIOGRAPHY

1. Al-Nsour, R., Abuaddous, M., (2022). A comparison study IFRS 9 and IAS 39 in GCC countries. European Jiurnal of Business and Management Research, 7(6), pp.7-13, https://doi.org/10.24018/ejbmr.2022.7.6.1687
2. Balakrishnan, K., Ertan A., (2021). Credit information sharing and loan loss recognition, The Accounting Review, 96 (4), pp. 27-50. https://doi.org/10.2308/TAR-2017-0244
3. Bholat, D., Lastra, R., Markose, S., Miglionico, A., Sen K., (2016). Non-performing loans:regulatory and accounting treatments of assets, Staff Working Paper no.594, London, https://dx.doi.org/10.2139/ssrn.2776586
4. Celik, S., (2019). Credits and Credit Analysis in Banking Sector. Interdiscipilnary Public Finance, Business and Economics Studies, Vol. II, Editura Peter Lang, Berlin, 2019 https://hdl.handle.net/20.500.11857/2680
5. Ghiță-Mitrescu, S., Duhnea C., (2015). IFRS9"s Impact on the Romanian banking system s provisions, Ovidius University Annals, 1, pp. 748-753, https://econpapers.repec.org/RePEc:ovi:oviste:v:xv:y:2015:i:1:p:748-753

6. Goyal, S., Singhal, N., Mishra, N. *et al.,* (2023)The impact of macroeconomic and institutional environment on NPL of developing and developed countries. *Futur Bus J* **9**, 45. https://doi.org/10.1186/s43093-023-00216-1
7. Grosu V., Ionescu-Feleagă, L., Macovei, A. G., Ciubotariu M. S., Hlaciuc,, E., Socoliuc Mariana, Petrescu, C., (2024): The Impact of IFRS 9 Adoption on the Financial Performance and Sustainability of Romanian Credit Institutions, Eastern European Economics, https://doi.org/10.1080/00128775.2024.2368031
1. Hada, T., Bărbuță-Mișu, N., Iuga, I. C., Wainberg, D., (2020). Macroeconomic determinants of nonperforming loans of Romania Banks, Sustainability, 12 (18), https://doi.org/10.3390/SU12187533
2. Hassan, K. H., Sheikh S.M., Rahman S., (2022) „Determinants of Non-Performing Loans (NPLs); Evidence from the Banking Sector of Pakistan", Annals of Social Sciences and Perspective, Vol.3, Nr.1, Pakistan, https://assap.wum.edu.pk/index.php/ojs/article/view/144
8. Ijuwo A.A., (2024). Non-performing loans and credit risk management in listed deposit money banks in Nigeria, International Journal of Research and Innovation in Social Science, vol. VIII, Isss: VII, pp.427, https://dx.doi.org/10.47772/IJRISS.2024.807036
9. Kasinger, J., et. al. (2021). Non-performing loans – new risk and policies? NPL resolution after COVID-19: Main differences to previous crises, SAFE White Paper, No. 84, Leibniz Institute for Financial Research SAFE, Frankfurt a. M., https://hdl.handle.net/10419/232027
10. Katsampoxakis și C. Basdekis, (2022). Factors Affecting Non-Performing Loans in Europe Before and After Global Financial Crisis, International Journal of Managerial Studies and Research , Vol. 10, Nr.9, 2022, pp.20-38
11. Moinescu, B. G., (2012). Determinants of nonperformaing loans in Central and Eastern European countries: macroeconomic indicators and credit discipline, Review of Economic and Business Studies, Al. I.Cuza University, Faculty of Economic and Business Administration, Issue 10, pp. 47-58.
12. Pop, I.D., Chicu N., Răduțu, A., (2018). Non-performing loans decision making in the Romanian banking system, Management & Marketing. Challenges for the Knowledge Society, Vol. 13, Nr. 1, pp. 761-776, https://doi.org/10.2478/mmcks-2018-0004
13. Ricapito, FP. (2024). Impactul IFRS 9 asupra riscului de credit și profitabilității în sectorul bancar european. *Corporate Ownership & Control, 21* (4), 41–48. https://doi.org/10.22495/cocv21i4art4
14. Singh P., Basuki I., Setiawan C., (2021). The Effect of Non-Performing Loan on Profitability: Empirical Evidence from Nepalese Comercial Bank, The Journal of Asian Finance, Economics and Business, Vol.8, Nr.4, 2021, pp.709-716, DOI: https://doi.org/10.13106/jafeb.2021.vol8.no4.0709
15. Tanasković, S. Jandrić, M. (2015). Macroeconomic and Institutional Determinants of Non-performing Loans, Journal of Central Banking Theory and Practice, 1, pp. 47-62
16. Vaicondam, Y., Hishan, S. .S, Shan, T. P. (2019). The Study on Factors That Influencing Banks' Non-Performing Loans in Malaysia, International Journal of Engineering and Advanced Technology, Vol. 8, Nr.5, pp.1289-1297
17. Vatansever, M., Hepşen, A., (2013). Determining impacts on non-performing loan ratio in Turkey, Journal of Finance and Investement Analysis, 2(4), pp. 119-129,
18. Vogiazas, S. D., Nikolaidou, E., (2011), Investigatingthe determinants of nonperforming loans in the Romanian baking system: an empirical study eith reference to the Greek crisis, http://dx.doi.org/10.1155/2011/214689
19. Wijoyo, T., Apriyani, E., (2024). An in-depth analysis of credit risk: taking proactive measure to tackle non-performing loans in the banking sector, Jurnal Mantik, 8(1), pp. 361-368. https://doi.org/10.35335/mantik.v8i1.5072