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THE IMPACT OF BANKING SECTOR LIQUIDITY AND STABILITY ON ECONOMIC GROWTH IN THE WESTERN BALKANS: EVIDENCE FROM 2013–2023

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Abstract: *This paper examines the impact of banking sector liquidity and stability on driving economic growth in the Western Balkans (comprising Kosovo, Albania, Montenegro, North Macedonia, Bosnia and Herzegovina, Croatia, and Serbia) from 2013 to 2023. Using panel data analysis, the study includes linear regression, Fixed Effects (FE), Random Effects (RE), Hausman-Taylor (HTH), and Generalised Method of Moments (GMM) to examine the relationship between key banking indicators and economic growth. The dependent variable is economic growth, while independent variables include private sector credit, bank deposits, non-performing loans, government expenditure and inflation. The empirical results suggest that the banking sector plays a crucial role in driving economic growth Western Balkans countries. Specifically, bank deposits have a positive and statistically significant effect, while private sector credit also shows a positive effect but is not statistically significant. In contrast, non-performing loans and inflation have a negative impact on economic growth. These findings underscore the importance of strengthening banking sector liquidity, stability and enhancing credit access to promote sustainable economic growth, providing valuable insights for policymakers and financial regulators.*

Keywords: *banking sector, economic growth, deposits, financial stability, panel data*

1. INTRODUCTION

The banking sector plays a key role in promoting economic growth in the Western Balkans. Household consumption remains a major driver of economic activity, supported by increasing public spending and rapid growth in household credit. Banks and other financial institutions facilitate access to finance for the private sector, making the stability and efficiency of the banking sector essential for sustainable economic development.

The primary objective of this paper is to investigate the impact of the banking sector on economic growth in the Western Balkan countries, with the research providing an empirical statistical analysis based on secondary data. The research questions of this paper are:

1. How do bank deposits influence economic growth in these countries?
2. To what extent do non-performing loans negatively impact economic growth in the Western Balkans?

The research hypotheses are:

- H1: Bank deposits have a statistically significant and positive effect on economic growth in Western Balkan countries.
- H2: Non-performing loans significantly negatively impact economic growth in the Western Balkans.

Previous studies have found mixed evidence on the relationship between the banking sector and economic growth in transition countries. Levine (2005) in his study, he emphasises the role of financial development in promoting economic growth, while Koivu (2002) emphasizes that high interest rate margins can hinder economic expansion, reflecting banking inefficiencies. Mehl and Winkler (2004) argue that financial sector reforms are necessary to influence growth, and Caporale et

al positively. (2009) demonstrate a strong link between bank credit availability and economic growth in EU transition countries, suggesting that limited access to credit restricts growth potential. The study contributes to the literature by providing an updated empirical analysis focused on the Western Balkans for the period 2013–2023, addressing a gap in regional evidence.

This paper examines the impact of the banking sector on economic growth in the Western Balkan countries, utilising panel data analysis. The study employs linear regression model, Fixed Effects (FE), Random Effects (RE), Hausman–Taylor (HTH), and Generalized Method of Moments (GMM) models to examine the relationships between key banking indicators and economic growth. The research includes private sector credit, bank deposits, non-performing loans, government expenditure, and inflation as independent variables.

The paper is structured as follows: the next section reviews relevant literature; the third section details the methodology; the fourth section presents empirical results; the fifth section discusses the findings and concludes.

2. LITERATURE REVIEW

In this section, we examine empirical evidence on the impact of the banking sector on economic growth and situate this study within the existing literature. The dominant body of research indicates that the relationship between banking sector and economic growth is both positive and bidirectional. This topic has been analyzed in the economic literature and most studies confirm a strong link between financial sector expansion and GDP growth (Levine, 2005; Fetai, 2018, Hasani-Limani, 2025).

According to Petkovski and Kjosevski (2013) the development of the banking sector impacts economic growth in several Central and Southeastern European countries, suggesting that inefficient credit allocation may hinder growth. Their study suggests that inefficient credit allocation may hinder economic growth in the region. Their results indicate that private sector credit and interest rate spreads have a negative impact on economic growth, whereas the quasi-money ratio has a positive effect. Similarly, Hasanov and Samadova (2019), focusing on Southeastern European countries, found that private sector credit and bank deposits have a significant influence on economic growth. They also emphasised the importance of a stable banking sector as a pillar of macroeconomic stability.

Recent studies in the Western Balkans further support these findings: Hajdari et al. (2024) It is shown that bank credit, interest rate spreads, and non-performing loans directly affect economic growth. In contrast, Hoxha et al. (2025) demonstrate that both internal bank factors and macroeconomic conditions influence banking profitability, thereby indirectly affecting growth. According to Pjetri et al. (2024) review the progress of the microfinance sector in Albania and highlight that constraints on liquidity and access to financing can limit the growth of small businesses, indirectly affecting overall regional economic performance.

As noted by Fetai (2018) in 20 European transition economies, financial development indicators have a statistically significant and positive effect on real GDP per capita growth. The study highlights the negative effects of financial crises, government spending, and inflation, showing both the role of financial development in fostering growth and the potential macroeconomic risks associated with excessive public spending and inflationary pressures.

Rajan and Zingales (1998) argued that industries that rely more on external financing tend to grow faster in countries with more developed financial systems, thus supporting the idea that well-functioning banking sectors can stimulate investment and enterprise development, especially in economies with less developed capital markets. Similarly, Jaffee and Levonian (1999) confirmed the positive link between banking sector efficiency and economic output in a study of 23 transition economies—meanwhile, Demirgüç-Kunt et al. (2007) highlighted the inclusive role of finance in promoting growth, improving income distribution and reducing poverty. Despite progress in increasing financial inclusion, particularly in terms of access to payment services and basic financial products, a significant portion of the population and businesses still remain excluded from financial services.

Recent studies emphasize the role of banking sector structure and policy in the Western Balkans. Ahmeti et al. (2023) highlight that the capital structure of banks affects their lending capacity, a key channel for stimulating economic growth, with profitability positively related to leverage, while liquidity and earnings volatility have negative effects.

According to Hasani-Limani (2025) provides empirical evidence linking financial deepening to economic growth in nine Western Balkan countries, addressing gaps in the literature regarding the region's financial integration and development.

Finally, Popescu et al. (2024) examined the cases of Spain, France, and Romania. Their study found a long-term structural relationship between the development of the banking sector and economic growth, with deposits and real interest rates playing a particularly significant role.

Sotiropoulou (2025) examined the relationship between financial development, economic growth, and income inequality in the transition economies of Central and Eastern Europe. The study highlighted the dual role of the banking sector in promoting economic growth while mitigating social disparities. The findings of this study indicated a causal relationship among financial development, economic growth, and income inequality.

3. RESEARCH METHODOLOGY AND DATA

This study uses panel data covering the period from 2013 to 2023 for seven Western Balkan countries: Kosovo, Albania, North Macedonia, Montenegro, Bosnia and Herzegovina, Croatia, and Serbia. Data are obtained from the World Bank for banking sector indicators and macroeconomic indicators. The banking sector variables analysed are credit to the private sector (% of GDP), bank deposits (% of GDP), and non-performing loans (% of total loans), the model also incorporates variables such as government expenditure (% of GDP) and inflation.

The empirical strategy employs several panel data estimation techniques to ensure robustness and account for potential econometric issues. These include regression linear, fixed effects (FE), random effects (RE), Hausman-Taylor estimation, and the Generalised Method of Moments (GMM) estimator developed by Arellano and Bond (1991), which is particularly suited for addressing endogeneity and autocorrelation in dynamic panel models.

Table 1. *Description of variables used in the econometric models*

Variables	Description of variables	Data source
Dependent variable (Y)	Gross Domestic Product (annual%) GDP	Annual Reports of the BankWorld (2013-2023)
Independent variable (X1)	Domestic credit to private sector (% of GDP) DCPS	Annual Reports of the BankWorld (2013-2023)
Independent variable (X2)	Bank deposits to GDP (annual%) Deposits	Annual Reports of the BankWorld (2013-2023)
Independent variable (X3)	Bank nonperforming loans to total gross loans (%) NPL	Annual Reports of the BankWorld (2013-2023)
Independent variable (X4)	Inflation, consumer prices (annual%) INF	Annual Reports of the BankWorld (2013-2023)
Independent variable (X5)	General government final consumption expenditure (% GDP) Gov_expen	Annual Reports of the BankWorld (2013-2023)

Source: Data analyzed by the authors (2025)

The econometric model of this study is as follows:

$$\ln GDP_{it} = \beta_0 + \beta_1 \ln DCPS_{it} + \beta_2 \ln Deposits_{it} + \beta_3 NPL_{it} + \beta_4 INF_{it} + \beta_5 Gov\_expen_{it} + y_{it} \quad (1)$$

4. EMPIRICAL RESULTS

In this section of the paper, we will analyse the econometric analysis for Western Balkan countries. This will involve examining descriptive statistics and using various econometric models. We aim to test hypotheses and address the research questions posed in this study. To do so, we will process all results using the STATA programme, since our data are secondary. By applying rigorous statistical techniques and econometric models, we seek to generate meaningful insights into the relationship between of banking sector liquidity and stability on economic growth.

Table 2. *Descriptive statistics of the variables used in the econometric model*

Variable	Observation	Mean	Std. Dev.	Min	Max
GDP	67	1.339648	.5187224	0	2.624669
DCPS	70	3.856358	.1959847	3.424263	4.222445
Deposits	67	4.01243	.1812292	3.634951	4.527209
NPL	70	7.815714	5.925201	0	22.2
INF	70	2.31	3.550797	-1.6	14.2
Gov_expen	77	16.94675	3.898231	10.2	24.8

Source: Authors' calculations in the Stata program (2025)

Based on the data obtained from descriptive statistics, we can observe that the variable with the highest mean is government expenditures. In contrast, the one with the lowest mean is economic growth. Regarding the standard deviation, the highest variability is found in non-performing loans, whereas the lowest is in credit to the private sector. In terms of minimum values, the lowest appears in economic growth, while the highest maximum value is observed in government expenditures.

Table 3. *Correlation matrix of variables included in the econometric model*

Variables	*GDP*	*DCPS*	*Deposits*	*INF*	*NPL*	*Gov_expen*
GDP	1.0000					
DCPS	0.1006 0.4403	1.0000				
Deposits	0.1152 0.3893	0.1927 0.1183	1.0000			
INF	-0.1420 0.2749	-0.1337 0.1183	0.1127 0.3637	1.0000		
NPL	-0.3666* 0.0037	0.1973 0.2700	0.3935* 0.0010	-0.3559 0.0025	1.0000	
Gov_expen	-0.0456 0.7139	0.7813* 0.0000	0.1778 0.1500	-0.0926 0.4459	0.2004 0.0962	1.0000

Source: Authors' calculations in the Stata program (2025)

Note: Values represent Pearson correlation coefficients. Numbers below the coefficients indicate p-values. Asterisk (*) denotes statistical significance at the 5% level.

The correlation indicates that government expenditures are strongly and positively correlated with private sector credit (0.7813), so an increase in public spending is associated with an expansion of credit to the private sector. Non-performing loans are negatively correlated with GDP (-0.3666), suggesting that an increase in problematic loans is associated with a slowdown in economic growth. Deposits and GDP exhibit a weak positive relationship (0.1152), while inflation has a weak negative relationship with both GDP (-0.1420) and private sector credit (-0.2749). Overall, the results indicate that the strongest and most significant relationships exist between government expenditures and private sector credit, as well as between non-performing loans and economic growth.
The following table presents the econometric results for the statistical tests analysed. In the research and for the econometric model for Western Balkan countries.

$$lnGDP_{it} = -6.795\ \beta_0 + 0.991 lnDCPS_{it} + 0.921 lnDeposits_{it} - 0.0952\ NPL_{it} - 0.0900 INF_{it} + 0.0971 Gov\_expen_{it} + y_{it}$$

Table 4. *Empirical findings and estimation results from the econometric model for Western Balkan countries*

Variables	Linear Regression	Fixed–Effects Regression	Random Effects – GLS Regression	Hausman – Taylor Regression	GMM Model
Lngdp	-	-	-	-	-
lnDCPS	0.958** (0.431)	0.991 (0.601)	0.843* (0.484)	0.813 (0.580)	24.42*** (4.115)
LnDeposits	1.230*** (0.429)	0.921** (0.411)	1.244*** (0.335)	0.956** (0.401)	-19.27*** (3.628)
NPL	-0.0572*** (0.0105)	-0.0952*** (0.0128)	-0.0627*** (0.0104)	-0.0879*** (0.0120)	0.190*** (0.0358)
INF	-0.0806*** (0.0281)	-0.0900*** (0.0178)	-0.0838*** (0.0200)	-0.0903*** (0.0176)	0.317*** (0.0152)
Gov_expen	-0.0494** (0.0230)	0.0971 (0.0623)	-0.0402 (0.0257)	0.0362 (0.0468)	-0.885*** (0.174)
Const.	-5.821** (2.208)	-6.795*** (2.297)	-5.533*** (1.818)	-5.020** (2.087)	-2.815 (5.357)
Obs	58	58	58	58	58
N	7	7	7	7	7
R- squared	0.466	0.635			
VIF	2.01				
F	0.0000	0.0000			
Chi^2			0.0000	0.0000	
Hausman test		0.015			
AR (1)					0.295
AR (2)					0.141
Sargan test					0.010
Hansen test					0.985

Source: Authors' calculations in the Stata program (2025)
*Explanation: P-values are shown in parentheses: *** indicates statistical significance at the level of 1%; ** indicates statistical significance at 5% level, and * indicates statistical significance at 10%.*

The Hausman test results (p = 0.015) confirm that the Fixed Effects model is more suitable for this panel data set than the Random Effects model. The Fixed Effects model also yields the highest R-squared value (0.635), indicating that it explains a larger proportion of the variation in economic growth, while controlling for country-specific effects.

The coefficient for private sector credit (DCPS) is positive and approximately 0.99, indicating that a 1% increase in private sector credit is associated with a 0.99% rise in GDP. However, in the Fixed Effects model, this coefficient is not statistically significant.

Bank deposits consistently show a positive and statistically significant relationship with economic growth. Specifically, a 1% increase in deposits results in approximately a 0.92% rise in GDP, significant at the 5% level. This supports the idea that greater bank liquidity and available funds contribute to economic expansion, thereby confirming hypothesis H1 regarding the positive impact of bank deposits on economic growth.

Non-performing loans (NPLs) have a statistically significant and negative effect on economic growth. A 1% rise in NPLs decreases GDP growth by about 0.095%, and this is significant at the 1% level. Based on this finding, we fully endorse hypothesis H2 regarding the negative impact of non-performing loans on economic growth. Inflation also consistently exhibits a statistically significant negative influence on growth.

The inflation has a negative and statistically significant impact on economic growth. If inflation increases by 1%, it will affect the decline in economic growth by 0.09%, which is significant at the 1% level. According to this result, inflation hurts investment stimulation and economic stability in the countries of the region. Government expenditure has a positive coefficient in the Fixed Effects model (approximately 0.097%), but this result is not statistically significant.

5. DISCUSSION/ CONCLUSIONS

The empirical findings of this study highlight the crucial role of the banking sector's liquidity and stability in promoting economic growth in the countries of the Western Balkans.

Bank deposits have a positive and significant impact on economic growth (Levine, 2005; Fetai, 2018), confirming the role of the financial sector in the efficient allocation of resources (Rajan & Zingales, 1998; Hasanov & Samadova, 2019).

Non-performing loans negatively affect economic growth and are statistically significant in reducing asset quality and increasing systemic risk, while inflation hinders investment and purchasing power. Stable banking systems and sound macroeconomic policies are essential for long-term economic growth (Popescu et al., 2024).

Recent regional studies provide important context for understanding these results. Empirical evidence shows that bank credit, interest rate spreads, and NPLs directly influence growth (Hajdari et al., 2024), while internal bank factors and macroeconomic conditions affect profitability and, indirectly, economic growth (Hoxha et al., 2025). Bank capital structure also determines lending capacity (Ahmeti et al., 2024), and financial deepening promotes growth depending on the level of development and EU integration (Hasani-Limani, 2025). These findings support the idea that liquidity, stability, and an efficient banking system are critical channels for promoting economic growth in the region.

Private sector credit have a positive but statistically insignificant effect, whereas bank deposits had a significant positive impact. Non-performing loans continued to hinder growth, confirming the risks from declining asset quality. Inflation also had a negative effect, while government expenditure was positive but not statistically significant.

The analysis underlines the importance of strengthening credit supervision to reduce non-performing loans and systemic risks, expanding access to finance for productive sectors, maintaining macroeconomic stability through inflation control, and improving the efficiency of public spending. Enhancing the resilience of the banking sector through effective regulation and financial intermediation mechanisms is essential to achieve sustainable and long-term growth in the Western Balkans. Among the models used, the Fixed Effects model provided the most reliable estimates, while the GMM model produced less robust results due to the small sample size. Limitations include the relatively small panel and incomplete data for some countries, which reduce statistical power and generalizability.

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