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The Impact of Economic Variables on Foreign Currency Loans in Albania: Evidence from 2002-2023.

Leonard BODURI
Faculty of Economics, Business and Development, European University of Tirana, Albania, leonardboduri@gmail.com.

Fabian PJETRI
Faculty of Economics, University Metropolitan Tirana, Albania, fabianpjetri@live.com, fpjetri@umt.edu.al.com ORCID: https://orcid.org/0009-0003-7518-1491

Irsa LILA
Faculty of Economics, Luiss University, Roma, Italy, irsalila@gmail.com

ABSTRACT

This study examines the macroeconomic determinants of foreign currency loans (FCL) in Albania from 2002 to 2023, a period marked by significant financial euroization. Utilizing time-series analysis, including correlation, regression, vector autoregression (VAR), and Granger causality tests, we assess the impact of GDP growth, inflation, price level ratio (PLR), foreign direct investment (FDI), remittances, and trade balance on FCL. Our findings reveal that while initial correlation analyses indicated strong associations between FCL and remittances, as well as the trade balance, these relationships did not translate into significant causal effects in regression and VAR models. Specifically, lagged values of FCL and inflation were the only significant predictors of current FCL in the VAR model. Granger Causality Tests further confirmed the absence of significant causal relationships between FCL and the examined macroeconomic variables, with a marginal indication that past FCL values may influence FDI. This suggests that the dynamics of FCL in Albania are primarily driven by its own past values and inflation, rather than direct impacts from other macroeconomic factors. The results highlight the complexity of predicting FCL in a highly euroized economy and underscore the need for nuanced policy approaches to manage exchange rate risks and ensure financial stability.

Keywords: Foreign Currency Loans (FCL), Financial Euroization, Macroeconomic Determinants, Time-Series Analysis, Vector Autoregression (VAR), Granger Causality, Financial Stability.

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I. Introduction.

Foreign currency loans (FCL) have played a significant role in the development of Albania's financial sector, especially in the context of a highly euroized economy. Since the early 2000s, Albania has experienced a continuous inflow of remittances, foreign direct investment (FDI), and trade-related payments, all of which have contributed to the widespread use of foreign currencies - primarily the euro - in both deposits and loans. This phenomenon is further amplified by the preference of Albanian businesses and households to borrow in foreign currencies due to perceived exchange rate stability and lower interest rates compared to domestic currency loans. However, this preference comes with significant risks, particularly in an economy with a relatively weak capacity to generate foreign currency income domestically. The dynamics of foreign currency loans in Albania are influenced by a complex interplay of macroeconomic factors. Variables such as GDP Growth, Inflation Rate, Price Level Ratio (PLR), Trade Balance, FDI inflows, and Remittance Flows are all believed to contribute directly or indirectly to the supply and demand for foreign currency credit. For instance, a deteriorating trade balance or rising inflation can lead to higher perceived exchange rate risks, affecting borrowers' decisions to take loans in foreign currency. Similarly, strong economic growth, rising remittance flows, and stable price levels could encourage more borrowing in foreign currency due to greater optimism about future income. Despite the importance of this topic, relatively few studies have empirically examined the specific macroeconomic determinants of foreign currency loans in Albania over an extended period. This paper aims to fill that gap by analyzing the impact of selected economic variables on foreign currency loan levels in Albania from 2002 to 2023. By doing so, the paper contributes to a deeper understanding of the factors that drive financial euroization and provides insights that are valuable for policymakers seeking to manage exchange rate risks and enhance financial stability.

II. Literature Review.

The issue of foreign currency loans (FCL) has received considerable attention in the international literature, particularly in the context of emerging economies with high levels of financial euroization. Several studies have explored the causes, consequences, and determinants of foreign currency lending, highlighting a range of macroeconomic, financial, and institutional factors that shape this phenomenon. One of the earliest strands of literature links the growth of foreign currency loans to exchange rate stability and interest rate differentials between local and foreign currency loans. Basso (Basso, 2011)

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argue that in countries with low exchange rate volatility, borrowers tend to perceive foreign currency loans as cheaper and less risky. This is particularly relevant in highly euroized economies, such as Albania, where economic agents often have a natural preference for euro-denominated transactions due to the dominant role of the euro in trade and remittances (Brown M. &., 2012). Another important determinant explored in the literature is economic growth and income expectations. According to (Rosenberg, 2009), periods of strong economic growth encourage higher borrowing in general, including in foreign currency, as both lenders and borrowers become more optimistic about future incomes. In Albania, periods of growth were often accompanied by increased inflows of remittances and foreign direct investment (FDI), both of which contributed to a higher supply of foreign currency liquidity in the banking sector (Kekic, 2008). A third line of research highlights the role of inflation and price stability in shaping borrowing preferences. High and volatile inflation undermines confidence in the local currency, encouraging households and businesses to shift both savings and loans into foreign currency (Schnabl, 2012). In the Albanian context, inflation has fluctuated over the years, but relative price stability particularly in comparison with other transition economies has been cited as a factor that partially mitigated excessive foreign currency borrowing (BankofAlbania, 2020). Furthermore, trade balance dynamics also play a role, as documented by (Luca, 2008), who argue that countries with persistent current account deficits and large import volumes tend to experience higher demand for foreign currency loans, especially by firms engaged in international trade. In Albania, the trade balance (TB) has often been in deficit, reflecting the country's reliance on imports and the need for foreign currency financing. Several papers have also highlighted the importance of regulatory and institutional frameworks. Brown, (Brown M. O., 2011) emphasize that weak regulatory oversight, combined with financial liberalization and aggressive lending practices, can amplify foreign currency lending. In the Albanian case, the Bank of Albania has introduced several macroprudential measures over the years to curb excessive reliance on foreign currency loans, but their effectiveness has been mixed, especially in the presence of structural factors such as high remittance flows and trade euroization. While these studies provide valuable insights, there is limited empirical research focusing specifically on Albania using a comprehensive set of macroeconomic variables over a long period, such as 2002-2023 (WorldBankGroup, 2025). Most existing studies either focus on broader euroization trends (Égert, 2007) or analyze short-term dynamics without considering the combined effects of economic growth, inflation, remittances, FDI, price levels, and trade balance on foreign currency loans. This paper aims to address

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this gap by providing an integrated empirical analysis that captures the multidimensional drivers of FCL in Albania over two decades.

III. Methodology.

3.1. Data Collection.

This study uses annual data for the period 2002-2023 to analyze the relationship between key economic variables and foreign currency loans (FCL) in Albania. The variables examined include: FCL (Foreign Currency Loans as a Percentage of Total Loans): Represents the proportion of loans denominated in foreign currency, serving as the main dependent variable in the analysis. GDPG (GDP Growth Rate): Measures the annual percentage change in Gross Domestic Product, used to capture the overall economic performance and growth dynamics. INFL (Inflation Rate): Represents the annual percentage change in the Consumer Price Index (CPI), reflecting price level stability and purchasing power erosion. REM (Remittances as a Percentage of GDP): Indicates the importance of remittance inflows from abroad, which are a key source of foreign currency liquidity in Albania's economy. FDI (Foreign Direct Investment as a Percentage of GDP): Captures the role of foreign capital inflows in financing economic development and contributing to foreign currency supply. PLR (Price Level Ratio): Compares Albania's price levels to those of the European Union, serving as an indicator of price competitiveness and relative purchasing power. TB (Trade Balance as a Percentage of GDP): Reflects the difference between exports and imports, highlighting the external sector's contribution to foreign currency demand and supply. The data were collected from publicly available sources, including reports from the Bank of Albania, World Bank datasets, International Monetary Fund (InternationalMonetaryFund, 2025) (IMF) publications, Institute of Statistics of Albania database (Instat, 2025), These data sources ensure reliability and consistency across the time period under examination. All values are presented as annual averages to maintain uniformity and comparability throughout the analysis. The relationship between foreign currency loans (FCL) and the selected macroeconomic variables, and to identify the key drivers influencing the share of foreign currency loans in Albania's banking sector, we employ the following econometric techniques: Stationarity Testing (M. B. Priestley, 1969): Since this study relies on time-series data covering the period 2002–2023 (WorldBankGroup, 2025), it is essential to ensure the stationarity of all variables. We apply the Augmented Dickey-Fuller (ADF) test (Mushtaq, 2011) to

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detect the presence of unit roots in each time series. If a variable is found to be non-stationary at level form, it will be differenced to achieve stationarity, ensuring valid statistical inference. Correlation Analysis (NJ Gogtay, 2017): To understand the initial relationships between the variables, we compute Pearson's correlation coefficients. This helps identify the strength and direction of associations between FCL and its potential drivers, including GDP Growth (GDPG), Inflation (INFL), Remittances (REM), Foreign Direct Investment (FDI), Price Level Ratio (PLR), and Trade Balance (TB). Regression Analysis (Benjamin Kedem, 2005): To quantitatively estimate the effect of macroeconomic factors on the share of foreign currency loans, we conduct a multiple linear regression analysis, where FCL serves as the dependent variable. The independent variables include GDPG, INFL, REM, FDI, PLR, and TB. This method allows us to measure both the magnitude and significance of each explanatory variable's impact on foreign currency loan dynamics. Vector Autoregression (VAR) Model (HelmutLütkepohl, 2013): Given the potential for bidirectional relationships among the variables, we employ a Vector Autoregression (VAR) model to capture the dynamic interdependencies. The VAR framework allows us to analyze how changes in one variable influence others over time, providing a holistic view of the interactions between FCL and the selected macroeconomic indicators. Granger Causality Test (Diks, 2006): To further explore the causal relationships between foreign currency loans and the explanatory variables, we apply the Granger causality test. This test helps determine whether past values of macroeconomic variables (such as GDPG, INFL, REM, FDI, PLR, and TB) can statistically predict future values of FCL, providing important insights into the lead-lag dynamics within Albania's financial system. By combining these complementary techniques, the study provides a comprehensive and robust analysis of the factors driving foreign currency loans in Albania. The results will offer valuable information for policymakers, financial institutions, and economic researchers, enhancing their understanding of foreign currency risk exposure in the context of an emerging economy.

IV. Results Time-Series Analysis.

4.1. Stationarity Testing and Data Preparation.

Prior to conducting the regression analysis, it is imperative to assess the stationarity of all variables involved—foreign currency loans (FCL), GDP growth (GDPG), inflation rate (INFL), remittances (REM), foreign direct investment (FDI), price level ratio (PLR), and trade balance (TB)—to mitigate

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the risk of spurious regression results. The Augmented Dickey-Fuller (ADF) test is employed to determine the presence of a unit root in each time series. Ensuring stationarity is essential for reliable regression estimates and accurate inference in time-series econometric analysis. If any of the series are identified as non-stationary at their original levels, differencing will be implemented until stationarity is achieved. Differencing involves taking the first difference of the series, which is calculated as the difference between the current value and the previous value. This process can be repeated until the series becomes stationary. The form of Augmented Dickey-Fuller (ADF) test equation applied by the authors is: $\Delta Y_t = \alpha + \beta * Y_{(t-1)} + \sum_{i=1}^{p} \gamma_i * \Delta Y_{(t-i)} + \varepsilon_t$. Where: 1) ΔY_t: First difference of the variable Y at time t. 2) α: Intercept term. 3) β: Coefficient of the lagged level of Y. 4) γ_i: Coefficients of the lagged first differences. 5) p: Lag order. 6) ε_t: Error term. The null hypothesis of the ADF test is that there exists a unit root in the series, implying non-stationarity. If the test statistic is significantly negative, we can reject the null hypothesis and conclude that the series is stationary.

Table 1: Null Hypothesis: FCL has a unit root.

Null Hypothesis: FCL has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=4)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			0.125198	0.9600
Test critical values:	1% level		-3.788030	
	5% level		-3.012363	
	10% level		-2.646119	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(FCL)				
Method: Least Squares				
Date: 02/27/25 Time: 19:33				
Sample (adjusted): 2003 2023				
Included observations: 21 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FCL (-1)	0.004907	0.039194	0.125198	0.9017
C	-0.018010	0.025219	-0.714148	0.4838
R-squared	0.000824	Mean dependent var		-0.014894
Adjusted R-squared	-0.051764	S.D. dependent var		0.018232
S.E. of regression	0.018698	Akaike info criterion		-5.030426
Sum squared resid	0.006643	Schwarz criterion		-4.930948
Log likelihood	54.81948	Hannan-Quinn criter.		-5.008837
F-statistic	0.015675	Durbin-Watson stat		1.475329
Prob(F-statistic)	0.901682			

Source: Data processed by the authors with the EViews 13 Econometric Program (February 2025).

The provided results indicate that the null hypothesis of a unit root in the FCL series cannot be rejected at any conventional significance level (1%, 5%, or 10%). Augmented Dickey-Fuller Test: The test

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statistic (0.125198) is greater than the critical values at the 1% (-3.788030), 5% (-3.012363), and 10% (-2.646119) significance levels. This indicates that the test fails to provide evidence against the null hypothesis of a unit root. Based on the ADF test, there is strong evidence that the FCL series is non-stationary. Since previous results on the first difference of FCL (D(FCL)) showed stationarity, this suggests that FCL follows an I (1) process, meaning it needs first differencing to become stationary.

4.2. Augmented Dickey-Fuller Test Results.

The ADF test results revealed that FCL is indeed non-stationary at its original level. The test statistic (0.125198) is greater than the critical values at the 1%, 5%, and 10% significance levels, and the high p-value (0.9600) further confirms the presence of a unit root. However, when the first difference of FCL (D(FCL)) was tested, the ADF test indicated stationarity, with a test statistic of -7.811089, which is significantly lower than all critical values. This suggests that FCL is integrated of order 1 (I (1)), meaning that it becomes stationary after taking the first difference. The ADF test result confirms that the first difference of FCL is stationary. This is a positive sign, as it indicates that the series is now suitable for further analysis, such as modeling and forecasting.

Table 2: Augmented Dickey-Fuller Test.

Null Hypothesis: D(FCL) has a unit root				
Exogenous: Constant				
Lag Length: 1 (Automatic - based on SIC, maxlag=4)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-7.811089	0.0000
Test critical values:	1% level		-3.831511	
	5% level		-3.029970	
	10% level		-2.655194	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations				
and may not be accurate for a sample size of 19				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(FCL,2)				
Method: Least Squares				
Date: 02/27/25 Time: 19:36				
Sample (adjusted): 2005 2023				
Included observations: 19 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (FCL (-1))	-1.473479	0.188639	-7.811089	0.0000
D (FCL (-1),2)	0.632134	0.146630	4.311066	0.0005
C	-0.025533	0.003951	-6.463107	0.0000
R-squared	0.792560	Mean dependent var		-0.002059
Adjusted R-squared	0.766630	S.D. dependent var		0.023165
S.E. of regression	0.011191	Akaike info criterion		-6.003555
Sum squared resid	0.002004	Schwarz criterion		-5.854433
Log likelihood	60.03377	Hannan-Quinn criter.		-5.978317

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F-statistic	30.56540	Durbin-Watson stat		1.637488
Prob(F-statistic)	0.000003			

Source: Data processed by the authors with the EViews 13 Econometric Program (February 2025).

The provided results indicate that the null hypothesis of a unit root in the first difference of FCL (D(FCL)) can be rejected at a 1% significance level. Augmented Dickey-Fuller Test: The test statistic (-7.811089) is less than the critical value (-3.831511) at the 1% significance level. This means that there is sufficient evidence to reject the null hypothesis of a unit root in D(FCL). Based on the ADF test, the first difference of the FCL series appears to be stationary, suggesting that the series is integrated of order 1 (I (1)). This means that the series requires one differencing operation to become stationary.

4.3. Analyzing the Correlation Matrix.

To examine the relationships between the dependent variable (FCL) and the independent variables, a correlation analysis was conducted. The correlation matrix (Dziuban, 1974) is presented below:

Table 3: Correlation Matrix.

FCL	1.000000	-0.416921	0.296923	0.097725	0.414175	0.948491	-0.639675
FDI	-0.416921	1.000000	-0.329226	-0.164872	0.155445	-0.551005	0.007000
GDPGR	0.296923	-0.329226	1.000000	0.205862	0.331614	0.408916	-0.479739
INFL	0.097725	-0.164872	0.205862	1.000000	-0.177947	0.193665	-0.180095
PLR	0.414175	0.155445	0.331614	-0.177947	1.000000	0.353192	-0.651719
REMIT	0.948491	-0.551005	0.408916	0.193665	0.353192	1.000000	-0.654857
TB	-0.639675	0.007000	-0.479739	-0.180095	-0.651719	-0.654857	1.000000

Source: Data processed by the authors with the EViews 13 Econometric Program (February 2025).

FCL and REMIT: A very strong positive correlation exists between FCL and REMIT (0.948491), indicating that as remittances increase, FCL tends to increase significantly. This suggests that higher remittance inflows positively influence the financial condition represented by FCL. FCL and TB: A strong negative correlation is observed between FCL and TB (-0.639675), suggesting that an increase in the trade balance deficit is associated with a decline in FCL. This relationship indicates that worsening trade conditions may negatively impact the financial metric represented by FCL. FCL and PLR: A moderate positive correlation exists between FCL and PLR (0.414175), implying that higher private lending rates are linked to an increase in FCL. This aligns with the expectation that increased lending activity may contribute to better financial conditions. FCL and GDPGR: A weak positive correlation is seen between FCL and GDPGR (0.296923), indicating that economic growth is associated with a slight

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increase in FCL. However, this relationship is not particularly strong. FCL and FDI: A moderate negative correlation is observed between FCL and FDI (-0.416921), suggesting that higher foreign direct investment might be linked to lower FCL levels, indicating a potential inverse relationship. FCL and INFL: The correlation between FCL and INFL (0.097725) is weak, indicating that inflation has a negligible effect on FCL. Overall, the correlation analysis suggests a very strong positive relationship between FCL and remittances, a strong negative relationship with the trade balance, and moderate correlations with PLR and FDI. The relationships with GDP growth and inflation are weaker. It's important to note that correlation does not imply causation, and further analysis is needed to establish causal relationships between these variables.

4. 4. Regression Analysis.

The primary objective of the regression analysis is to quantitatively assess the influence of key economic variables, such as Foreign Direct Investment (FDI), GDP growth rate (GDPGR), Inflation rate (INFL), Private Lending Rate (PLR), Trade Balance (TB), and Remittances (REMIT) on the Financial Condition Level (FCL) in Albania. By employing a multiple linear regression model, we aim to determine the magnitude and statistical significance of the relationships between these variables. The multiple linear regression model applied by the authors in relation to the variables used in this paper can be expressed as follows:

FCLt=β0+β1×FDIt+β2×GDPGRt+β3×INFLt+β4×PLRt+β5×TBt+β6×REMITt+εtFCL_t = \beta_0 + \beta_1 \times FDI_t + \beta_2 \times GDPGR_t + \beta_3 \times INFL_t + \beta_4 \times PLR_t + \beta_5 \times TB_t + \beta_6 \times REMIT_t + \varepsilon_tFCLt=β0+β1×FDIt+β2×GDPGRt+β3×INFLt+β4×PLRt+β5×TBt+β6×REMITt+εt. Where: FCL t: Financial Condition Level at time t (dependent variable). FDI t: Foreign Direct Investment at time t. GDPGR t: GDP growth rate at time t. INFL t: Inflation rate at time t. PLR t: Private Lending Rate at time t. TB t: Trade Balance at time t. REMIT t: Remittances at time t. β_0: Intercept (constant term). β_1, β_2, β_3, β_4, β_5, β_6: Coefficients of the independent variables, representing their respective effects on FCL. E t: Error term, capturing unobserved factors that influence FCL. This model posits that the Financial Condition Level (FCL) is a linear function of the independent variables, with the coefficients β_1, β_2, β_3, β_4, β_5, and β_6 indicating the

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marginal impact of each variable on FCL. The error term ε t accounts for any unexplained variation in FCL that is not captured by the included variables.

Table 4: Method: Least Squares.

Dependent Variable: FCL				
Method: Least Squares				
Date: 02/27/25 Time: 19:51				
Sample: 2002 2022				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.014821	0.004538	-3.266107	0.0056
FDI	0.005771	0.003004	1.921282	0.0753
GDPGR	-9.21E-05	0.001380	-0.066765	0.9477
INFL	-0.000453	0.001978	-0.229075	0.8221
PLR	0.121440	0.123584	0.982645	0.3425
REMIT	0.005404	0.006121	0.882876	0.3922
TB	0.099629	0.218510	0.455947	0.6554
R-squared	0.340651	Mean dependent var		-0.014890
Adjusted R-squared	0.058073	S.D. dependent var		0.018225
S.E. of regression	0.017688	Akaike info criterion		-4.970655
Sum squared resid	0.004380	Schwarz criterion		-4.622481
Log likelihood	59.19188	Hannan-Quinn criter.		-4.895092
F-statistic	1.205511	Durbin-Watson stat		1.400792
Prob(F-statistic)	0.359391			

Source: Data processed by the authors with the EViews 13 Econometric Program (February 2025).

The provided regression analysis results indicate that none of the independent variables (FDI, GDPGR, INFL, PLR, REMIT, TB) have a significant effect on the dependent variable (FCL). Coefficient Significance: The t-statistics for all the independent variables are below the commonly used significance levels (e.g., 5% or 10%). The corresponding p-values are greater than the significance levels, suggesting that the coefficients are not statistically significant. Model Fit: The R-squared value is relatively low (0.340651), indicating that the independent variables explain only a modest portion of the variation in FCL. The adjusted R-squared value is even lower (0.058073), suggesting that the inclusion of independent variables does not improve the model's fit significantly. Based on the analysis, there is no strong evidence to suggest that FDI, GDPGR, INFL, PLR, REMIT, or TB have a significant impact on FCL.

4.5. VAR Model.

VAR models are a popular method for multivariate time series, such as the one in this study. These results are from a Vector Autoregression (VAR) model, which is a type of time series model used to analyze dynamic relationships between multiple variables.

Table 5: Vector Autoregression Estimates.

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Vector Autoregression Estimates			
Date: 02/27/25 Time: 19:55			
Sample (adjusted): 2004 2022			
Included observations: 19 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	FCL		
FCL(-1)	0.291327		
	(0.16896)		
	[1.72423]		
FCL (-2)	-0.719398		
	(0.16849)		
	[-4.26967]		
C	-0.026187		
	(0.00403)		
	[-6.49545]		
FDI	0.001396		
	(0.00186)		
	[0.74998]		
GDPGR	0.001231		
	(0.00078)		
	[1.58627]		
INFL	0.004269		
	(0.00160)		
	[2.66157]		
PLR	-0.056719		
	(0.08278)		
	[-0.68522]		
REMIT	-0.001714		
	(0.00434)		
	[-0.39515]		
TB	0.195609		
	(0.12870)		
	[1.51992]		
R-squared	0.799749		
Adj. R-squared	0.639549		
Sum sq. resids	0.000866		
S.E. equation	0.009306		
F-statistic	4.992176		
Log likelihood	68.00346		
Akaike AIC	-6.210891		
Schwarz SC	-5.763525		
Mean dependent	-0.018295		
S.D. dependent	0.015500		

Source: Data processed by the authors with the EViews 13 Econometric Program (February 2025).

The provided vector autoregression (VAR) estimates indicate the relationships between the variables in the model, focusing on the dependent variable FCL. Coefficient Significance: FCL (-1): The coefficient (0.291327) is positive and statistically significant at the 10% level, as indicated by the t-statistic (1.72423). This suggests a positive relationship between the previous period's FCL and the current FCL. FCL (-2): The coefficient (-0.719398) is negative and significant, with a t-statistic of -4.26967, indicating that FCL two periods ago has a strong negative impact on the current FCL. Constant (C): The constant

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term (-0.026187) is significant with a t-statistic of -6.49545, indicating a negative baseline level of FCL. FDI: The coefficient (0.001396) is not statistically significant (t-statistic = 0.74998), suggesting that foreign direct investment does not have a meaningful impact on FCL in this model. GDPGR: The coefficient (0.001231) is positive but not significant (t-statistic = 1.58627), indicating a weak relationship with FCL. INFL: The coefficient (0.004269) is significant with a t-statistic of 2.66157, suggesting a positive relationship between inflation and FCL. PLR: The coefficient (-0.056719) is not statistically significant (t-statistic = -0.68522), indicating that the nonperforming loan rate does not significantly impact FCL. REMIT: The coefficient (-0.001714) is also not significant (t-statistic = -0.39515), indicating that remittances do not have a meaningful effect on FCL. TB: The coefficient (0.195609) is positive but not statistically significant (t-statistic = 1.51992), suggesting a weak relationship with FCL. Model Fit: The R-squared value (0.799749) indicates that the model explains approximately 80% of the variation in FCL, which is relatively high. However, the adjusted R-squared (0.639549) is lower, suggesting that not all included variables contribute significantly to the model. The F-statistic (4.992176) suggests that the model as a whole is statistically significant, but the individual variable significance varies. Overall, the VAR analysis reveals that past values of FCL significantly influence current FCL, particularly FCL from two periods ago. Inflation is the only other variable that shows a significant relationship with FCL. Other variables, such as FDI, GDP growth, PLR, REMIT, and TB, do not appear to have a significant impact in this model.

4.6. Granger Casualty Test.

To examine the direction of causality among the variables, we perform Granger causality tests. These tests assess whether the past values of one time series provide useful information for forecasting another, offering insights into the predictive relationships between variables.

Table 6: Pairwise Granger Causality Tests.

Pairwise Granger Causality Tests			
Date: 02/27/25 Time: 19:59			
Sample: 2002 2022			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause FCL	19	1.15345	0.3438
FCL does not Granger Cause FDI		3.06937	0.0785
GDPGR does not Granger Cause FCL	19	1.23381	0.3210
FCL does not Granger Cause GDPGR		0.17983	0.8373
INFL does not Granger Cause FCL	19	0.85946	0.4446
FCL does not Granger Cause INFL		0.18108	0.8363
PLR does not Granger Cause FCL	19	0.38053	0.6904
FCL does not Granger Cause PLR		0.87346	0.4391

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REMIT does not Granger Cause FCL	19	0.12242	0.8857
FCL does not Granger Cause REMIT		1.54832	0.2469
TB does not Granger Cause FCL	19	0.16464	0.8498
FCL does not Granger Cause TB		0.91698	0.4224
GDPGR does not Granger Cause FDI	19	0.54734	0.5904
FDI does not Granger Cause GDPGR		0.27711	0.7620
INFL does not Granger Cause FDI	19	1.10840	0.3574
FDI does not Granger Cause INFL		0.14985	0.8622
PLR does not Granger Cause FDI	19	0.26568	0.7705
FDI does not Granger Cause PLR		1.63567	0.2299
REMIT does not Granger Cause FDI	19	0.63882	0.5426
FDI does not Granger Cause REMIT		0.95041	0.4102
TB does not Granger Cause FDI	19	3.41053	0.0621
FDI does not Granger Cause TB		0.20578	0.8164
INFL does not Granger Cause GDPGR	19	0.67775	0.5237
GDPGR does not Granger Cause INFL		9.72541	0.0022
PLR does not Granger Cause GDPGR	19	0.70352	0.5115
GDPGR does not Granger Cause PLR		1.66812	0.2240
REMIT does not Granger Cause GDPGR	19	0.70734	0.5097
GDPGR does not Granger Cause REMIT		0.09086	0.9137
TB does not Granger Cause GDPGR	19	0.67694	0.5240
GDPGR does not Granger Cause TB		1.06526	0.3710
PLR does not Granger Cause INFL	19	0.17961	0.8375
INFL does not Granger Cause PLR		1.76297	0.2076
REMIT does not Granger Cause INFL	19	1.11905	0.3541
INFL does not Granger Cause REMIT		0.14999	0.8621
TB does not Granger Cause INFL	19	2.11617	0.1574
INFL does not Granger Cause TB		0.56804	0.5792
REMIT does not Granger Cause PLR	19	2.53358	0.1151
PLR does not Granger Cause REMIT		0.63986	0.5421
TB does not Granger Cause PLR	19	1.06506	0.3711
PLR does not Granger Cause TB		0.24146	0.7887
TB does not Granger Cause REMIT	19	0.93024	0.4175
REMIT does not Granger Cause TB		0.40817	0.6725

Source: Data processed by the authors with the EViews 13 Econometric Program (February 2025).

The results of the pairwise Granger causality tests indicate that there are no significant causal relationships between the variables analyzed (FDI, GDPGR, INFL, PLR, REMIT, TB, and FCL) at the 5% significance level. Here's a breakdown of the findings: FDI and FCL: There is no evidence that FDI Granger causes FCL, although there is a marginally significant finding suggesting that past values of FCL may influence FDI ($p = 0.0785$). GDPGR and FCL: No Granger causality is detected between GDPGR and FCL in either direction. INFL and FCL: There is no Granger causality between INFL and FCL in either direction. PLR and FCL: The results indicate that there is no Granger causality between PLR and FCL. REMIT and FCL: There is no significant causality identified between REMIT and FCL in either direction. TB and FCL: The test results show no evidence of Granger causality between TB and FCL. Other Variable Relationships: Overall, no Granger causality is detected among the other pairs of variables, including GDPGR, INFL, PLR, REMIT, and TB. The only notable finding is the marginally

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significant relationship where past values of FCL may provide some predictive information for FDI. However, for all other variable pairs, the results do not provide sufficient evidence to conclude that one variable Granger causes the other.

V. Conclusions.

This study investigated the relationships between financial condition (FCL) and several macroeconomic variables, including foreign direct investment (FDI), gross domestic product growth rate (GDPGR), inflation (INFL), private lending rate (PLR), remittances (REMIT), and trade balance (TB). Initial correlation analysis revealed a strong positive association between FCL and REMIT, a strong negative association with TB, and moderate correlations with PLR and FDI. However, these correlations did not translate into statistically significant causal relationships in subsequent analyses. Regression analysis demonstrated that the selected macroeconomic variables collectively explained only a limited portion of the variance in FCL, with no individual variable exhibiting statistically significant effects. This was further supported by the vector autoregression (VAR) model, where only lagged values of FCL and inflation (INFL) showed significant associations with current FCL. Specifically, FCL lagged by two periods displayed a strong negative impact, while INFL had a positive, albeit modest, effect. Other macroeconomic variables, including REMIT and TB, which initially showed strong correlations, did not exhibit significant effects in the VAR model. Furthermore, Granger causality tests revealed no statistically significant causal relationships between FCL and any of the examined macroeconomic variables at the 5% significance level. A marginally significant relationship was observed where past values of FCL might influence FDI, but this finding requires further investigation. In summary, while correlation analyses suggested potential relationships, particularly between FCL and REMIT and TB, these relationships were not substantiated by regression, VAR, or Granger causality analyses. The findings highlight the complexity of predicting FCL using the selected macroeconomic variables and underscore the importance of considering lagged effects of FCL and the potential influence of inflation. Future research should explore alternative model specifications and additional variables to better understand the determinants of FCL and to clarify the observed discrepancies between correlation and causal analyses.

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