

CREDIT GROWTH AND ECONOMIC PERFORMANCE INDICATORS IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

The study examines the relationship between credit growth and economic performance metrics in the Republic of North Macedonia, including the influence of credit on investments and consumption. Using the generalized method of moments (GMM) and ordinary least squares (OLS), two models are evaluated for the impact of loans to companies and households: one for investment and one for household final consumption. Cointegration is tested using the ARDL bounds approach, which incorporates both long-run relationships and short-run dynamics through the Error Correction Model (ECM). The purpose is to determine the direction in which credit activity influences GDP growth via investments and consumption. According to the first model, which examines household final consumption, the growth rate of firm loans has a greater impact on the growth rate of household final consumption. In contrast, the growth rate of household loans has no statistically significant effect on household final consumption. In the second model, the growth of lending to the population affects investments with a higher intensity, while the growth of lending to companies affects investments with a lower intensity.

Keywords: Gross fixed capital formation (% of GDP), final household spending (% of GDP), the growth rate of all household loans, the growth rate of all business loans, North Macedonia

1. Introduction

Fixed assets are tangible or intangible, produced as output from production processes, and used continuously for over a year (Eurostat, 2019). Factors that influence the formation of capital in a country are savings, the income of individuals, tax policy of the government, willingness to save, profits of public sector enterprises, market conditions, investment opportunities, changing income tax policies, monetary policy, taxation of goods and the budget deficit (Shikha, 2022).

Thus, it cannot be said that FDI is always included in gross fixed capital formation (The World Bank Group, 2022). Still, revenues cannot be used for enterprise investment purposes. Most enterprises in transition countries face credit constraints because they lack the experience of operating in a market economy and the presence of strategic investors (Krkoska, 2001). Facilitation for FDI and the unequal treatment of domestic investors in North Macedonia is causing reactions of particular interest based on the argument of discrimination against domestic investors. Namely, since reliefs are given only to foreign investors, it is obvious that domestic companies are increasingly discriminated against (Karajkov, et al., 2016).

About one-third of European gross fixed investment is machinery and equipment (Kolev, 2013). In some countries, bank deleveraging hurt credit provision but did not significantly affect investment in Eastern Europe. Firms do not invest less in countries where the banking sector reduces its leverage; that is, firms that are less dependent on bank financing reduce their investments less than other firms that are more dependent on lending (Mosk & Ongena, 2013).

However, uncertainty and a sharply deteriorating economy are the main reasons for the extraordinary decline in investment, and weakness will continue even as economic conditions gradually improve (Kolev, et al., 2021).

It can be approached from a microeconomic and macroeconomic perspective of the empirical analysis that refers to the limitations faced by legal entities when securing corporate loans. At the same time, if it comes down to the analysis for RNM, the limitations in the accessibility of the companies' loans mostly refer to the legal restrictions, the banks' policies of the large documentation when applying, and the high collateral as security, in addition to the solvency and liquidity of the companies.

This is largely driven by the recovery in the labor market, although unemployment in some countries and for some groups of workers remains higher than before the financial crisis (Dossche, et al., 2018). In this new environment, the consumer credit channel can enhance the reduction of informal employment and can be as important as the corporate credit channel (Aşık, 2018). Finally, there is little evidence that low interest rates have led to a generalized increase in household indebtedness, supporting the view that the overall economic expansion is sustainable (Dossche, et al., 2018).

The study examines how credit expansion and economic performance metrics in North Macedonia interact (the influence of credit through investments and consumption). Two distinct theories have been developed in light of the theoretical frameworks and empirical research on the connection between financial and economic growth. In other words, *H1*: The growth of total household/business credit has a stronger effect on GDP growth through consumption, and *H2*: The growth of total household/business credit has a stronger effect on GDP growth through investments.

H1₀: The growth of total household loans has a greater impact on GDP growth through consumption.

H1_A: The GDP growth through consumption is more significantly impacted by the expansion of the enterprises' total loans.

H2₀: GDP growth through investments is more significantly impacted by the rise of total household loans.

H2_A: Through investments, the GDP growth is more significantly impacted by the expansion of the enterprises' total loans.

The objective is to ascertain how credit activity affects GDP growth through investments and consumption.

2. Literature review

In the period of economic expansion, Gómez (2018) analyzes the problems of access to external finance faced by European SMEs by using a panel of about 5,000 SMEs from 12 European countries for the period 2014 – 2016. On the other hand, Western Balkan countries face several obstacles such as low savings rates, high interest margins, and a large volume of non-performing loans, resulting in low output (Rehman & Hysa, 2021). This indicates the relevance of the development of the financial sector (Lensink, 2000). Berglöf & Bolton (2003) show little evidence that financial development stimulates economic growth in transition countries.

Albuquerque (2022) raises the question of whether corporate debt affects investment in the medium term. Using US firm-level data from 1984 to 2019, it finds that debt growth among vulnerable financial firms causes a permanent reduction in capital and intangible assets. According to research by Popov, et al. (2018), who use a pan-European database of 8.5 million firms, they find that highly indebted firms invest relatively more than similar firms if they operate in sectors facing good opportunities for global growth. At the same time, the positive impact of a marginal increase in debt on investment efficiency disappears if the firm's debt is already excessive, and short maturities dominate during systemic banking crises (Popov, et al., 2018).

In the literature, it is seen that different variables have been used as variables for financial growth. The results obtained from the applied studies, which were conducted on financial and economic growth, differ across the countries and the variables used. It can be said that financial development, which is generally measured in terms of credit level and capital market size, is an estimator of economic growth. Wen et al. (2021) examine the impact of financial development on major economic indicators, including economic growth, inflation, and employment, using panel data of 120 countries for the period 1997 to 2017. The reason is that when financial institutions anticipate growth in sectors and provide more credit, capital markets capitalize on the values of existing growth opportunities (Ariç, 2014).

3. Methods

This model was developed using the models of Garcia-Escribano and Fei (2015), who investigate how credit growth and the makeup of the credit portfolio, which includes mortgage, consumer, and business loans, affect economic growth in developing economies (Garcia-Escribano, et al., 2015). Through the use of cross-country regression panels, they discover that credit growth has a substantial effect on real GDP growth, with the extent and mode of transmission of this effect varying according to the kind of credit. Specifically, the findings indicate that consumer credit shocks are associated with private consumption, but corporate credit shocks primarily impact GDP growth through investment (Garcia-Escribano, et al., 2015). Namely, the analysis covers the creation of two models, where one expresses as a dependent variable the final consumption of households (% of GDP), and the other, the formation of gross fixed capital (% of GDP). In these models, the growth rates of household loans and loans to other non-financial entities (businesses) are key independent variables. To avoid bias in the obtained results, more control variables are included in the models. Through investments and consumption, these models aim to ascertain the direction of credit activity's impact on GDP growth. The theoretical model underlying the analysis, as outlined in the paper by Garcia-Escribano and Fei (2015), is as follows:

$$Y_{it} = \alpha_0 + \alpha_1 Credit_{it}^{Corporate} + \alpha_2 Credit_{it}^{Consumer} + \alpha_3 Credit_{it}^{Housing} + \alpha_4 X_{it} + \alpha_5 Z_t + u_{it} \quad (1)$$

Where:

Y_{it} – the model is evaluated for two dependent variables separately, that is C_{it} – the share of private consumption in real GDP growth, and I_{it} , the share of investments in real GDP growth.

$Credit_{it}^{Corporate}$, $Credit_{it}^{Consumer}$, $Credit_{it}^{Housing}$ – share of corporate loans, household loans, and mortgage loans in total credit growth, respectively,

X_{it} – Domestic control variables include corporate securities issuance, real effective exchange rates, short-term interest rates, and public consumption growth (Garcia-Escribano, et al., 2015),

Z_t – global control variables that help capture global conditions and environment in the post-Great Financial Crisis period (OECD real GDP growth rate, global interest rates, and global index of options market volatility).

Based on the model from equation (1), for this research, the following two models have been defined:

Model 1.

$$\Delta FCE_h = \alpha_0 + \alpha_1 \Delta Credit_{hg} + \alpha_2 \Delta Credit_{cg} + \alpha_i \Delta X_1 + u_1 \quad (2)$$

Where:

FCE_h – final household consumption (% of GDP),

$Credit_{hg}$ – a growth rate of total household credits,

$Credit_{cg}$ – a growth rate of total loans of companies,

X_1 – a group of control variables (real effective exchange rate, public final consumption growth rate, real GDP growth rate among OECD, real GDP growth rate, unemployment rate, inflation rate, and credit interest rates),

u_1 – random error.

Model 2.

$$\Delta GFCF_h = \beta_0 + \beta_1 \Delta Credit_{hg} + \beta_2 \Delta Credit_{cg} + \beta_i \Delta X_2 + u_2 \quad (3)$$

Where:

$GFCF_h$ – gross fixed capital formation as a proportion of GDP,

$Credit_{hg}$ – the growth rate of household credits overall,

$Credit_{cg}$ – a growth rate of total loans of companies,

X_2 – set of control variables (growth rate of real GDP, credit interest rates, current account balance, budget balance, and unemployment rate),

u_2 – random error.

As can be seen from the equations, the models are adapted to fit the environment in the country, while also considering the statistical data that is available for the variables. Also, an important difference with the theoretical model from equation (1) is that some of the variables in these models are differentiated by the first difference method because they are non-stationary, that is, integrated of the first order. It is important to know that the use of non-stationary variables in regression analysis can lead to the so-called "spurious regression", that is, to result in unreliable results. In addition, differentiating the independent variables helps to eliminate the problem of multicollinearity, especially since there is both theoretical and empirical evidence of a high degree of correlation between the selected independent variables.

The choice of control variables is made by economic theory and empirical literature, to include factors such as monetary and fiscal mix of policies, price and monetary stability, economic potential, and the openness of the economy to foreign countries. Table 1 provides a comprehensive summary of the variables utilized in the analysis, together with the order of integration and each variable's source. Using the expanded Dickey-Fuller¹ test for stationarity, the order of integration of the variables was ascertained. The interest rates of loans in North Macedonia are integrated of the second order, as a result of an extreme value in 2004. If this extreme value is removed (or replaced by the average for the entire period), the series becomes first-order integrated, or I(1). However, assuming that the variable is I(1), this 2004 disruption is kept because it contributes to a better overall fit of the models (higher coefficient of determination).

Table 1. Analysis-related variables

Variable	Indicator	Source	Integration order
GFCF	Formation of gross fixed capital, % of GDP	World Bank ²	I(1)
FCE_h	Final household consumption and household-serving non-profit spending as a %) of GDP		I(1)

¹ Dickey, D.A., & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366), 427-431.

² World Bank (2025). *World Development Indicators*. [Accessed on: 17 05 2025]. Available at:

REER	Index of the real effective exchange rate, 2010 = 100		I(1)
RIR	Actual interest rates, %		I(1)
FCE_gg_g	The public final consumption growth rate, %		I(0)
OECD_GDP_g	The real GDP growth rate in OECD countries, %	OECD ³	I(0)
Credit_h_g	Growth rate of total household loans, % (individuals and self-employed individuals)	NBRNM / Calculation	I(1)
Credit_c_g	The growth rate of total lending to non-financial institutions, % (enterprises)		I(1)
LIR	Weighted interest rates on total Denar loans granted, % on an annual level, average for the period	NBRNM ⁴	I(1)
GDP_g	Growth rate of real GDP, %		I(0)
INF	Inflation rate, % (average, on a cumulative basis)		I(0)
UN	Rate of unemployment, %		I(1)
Budget	Budget balance, % of GDP (balance of central budget and funds)		I(1)
M1	Money supply (M1), rates of change in % per year		I(0)
Saldo	The balance of payments' current account balance as a % of GDP		I(0)

Source: Authors' calculation

For this research, data were used for the period from 1991 to 2019, but because some of the variables lacked data, as well as the differentiation of the variables, the sample was shortened for the period from 1998 to 2019. In addition, due to the lack of data on the public final consumption growth (FCE_gg_g) in 2019, this value was obtained using the moving average method for the two previous years⁵.

The models from equations (2) and (3) are estimated using the Ordinary Least Squares (OLS) method. To account for the potential feedback relationship between dependent variables (household consumption and gross fixed capital formation) and key independent variables (growth rates of household and firm credits), the models were analyzed using both ordinary least squares (OLS) and generalized method of moments (GMM) for validation (Garcia-Escribano, et al., 2015). All the initially defined control variables, as well as the lags of the dependent and key independent variables (endogenous) of the first and second order, are taken as instrumental variables in GMM (Arellano & Bond, 1991). Thus, the total number of instrumental variables included in the ratings is 12.

Methodologically, the evaluation of the models starts from the evaluation of a general model that includes all initially defined control variables, according to the economic literature, after which those control variables that are statistically insignificant are gradually excluded. The goal is to eventually obtain a model where all control variables are statistically significant. This procedure allows for monitoring of the changes in the estimated coefficients of the key independent variables, for different specifications of the model, which is a kind of check for their stability (Robustness).

Thus evaluated, the models are subject to diagnostic tests to determine their suitability and reliability. These diagnostic tests refer to Gauss-Markov assumptions, while for GMM models, the J-statistics (Sargan J-statistics) are also calculated for the consistency of the instrumental

<https://data.worldbank.org/indicator/>

³ OECD. (2024). *OECD Economic Outlook, Volume 2024, Issue 2*. OECD Publishing.

⁴ NBRNM (2017). [Accessed on 11 07 2022]. *National Bank of the Republic of North Macedonia*. Available at:

https://www.nbrm.mk/osnovni_ekonomski_pokazateli.nsp

⁵ Makridakis, S., Wheelwright, S. C., & Hyndman, R. J. (1998). *Forecasting: Methods and Applications* (3rd ed.). Wiley.

variables. In this direction, to remove any unintended consequences that might arise from heteroscedasticity while evaluating the models, correction of the standard errors were corrected using the White method.

4. Results

The linear connection between the independent and dependent variables is extremely important when it comes to regression analysis. Namely, there needs to be some degree of linear relationship between the dependent and independent variables to do a regression analysis, as seen by the correlation coefficients. These coefficients are shown in Table 2 below. As can be seen from what is shown, in the first model, there is no linear relationship between the variation in household final consumption and GDP growth rate. Even yet, there is a slight inverse link between changes in household final consumption and changes in the growth rate of total household credits and GDP growth rates in OECD countries. There is a moderate correlation between the dependent and independent variables in the remaining Model (1) variables, but it is more noticeable in the variations in the growth rates of the private sector's total credits and final public consumption.

Table 2. Correlation coefficients between dependent and independent variables

	D_FCE_H	D_GFCF
D_CREDIT_H_G	-0,11	0,27
D_CREDIT_C_G	0,45	0,01
D_REER	-0,27	-
FCE_GG_G	-0,38	0,32
OECD_GDP_G	-0,11	-
GDP_G	0,00	0,28
INF	-0,23	0,62
D_LIR	-0,20	-0,23
D_UN	0,37	-0,17
D_RIR	0,36	-
SALDO	-	-0,39
D_BUDGET	-	-0,13
M1	-	0,26

Source: The author's computations

In Model (2), there is an absence of a linear relationship between gross fixed capital formation and the private sector's overall credit growth rate. It has a moderate relationship with the rest of the independent variables, with a slightly higher correlation with the inflation rate.

The assessments of the models from equations (2) and (3), utilizing the GMM and OLS techniques, are shown in Tables 3 and 5, below.

Table 3. Evaluation of Model 1

FCEH (% of	OLS	
C	2.016064	1,903053
D_CREDIT_H_G	-0,00953	0,028402
D_CREDIT_C_G	0,304295	0,322915
D_REER	-	-
FCE_GG_G	-	-

OECD_GDP_G	-	-
GDP_G	-	-
INF	0,383671	0,718875
D_LIR	1,063064	0,588622
D_UN	0,502203	-
Sample	1998 -	2000 -
N	22	20
Coefficient of	0,91	0,85
Adjusted	0,84	0,75
F-statistics	12,98 *	-
Durbin-Watson	2,04	1,47
Ramsay RESET	0,5	-
Jarque-Bera test	1,72	3,99
Breusch-Godfrey	0,03	-
Breusch-Godfrey	0,32	-
White's test ⁷ (no	11	-
Breusch-Pagan-	5,68	-
Instrument Rank ⁹	-	14
Sargan J-	-	4,88
Endogeneity test	-	1,89
Note: *, **, and *** stand for statistical		

Source: Computed by the author

Regarding the first model, at a significance level of 0.01, it is statistically significant, with an adjusted coefficient of determination of 0.84. In other words, the variance in the independent variable accounts for 85% of the variance in the dependent variable. In addition, the model fulfills all the assumptions of OLS, i.e., it has a correct functional form (Ramsey RESET test), there is no autocorrelation of the first and second order (Durbin-Watson test and Breusch-Godfrey LM test), the residuals have a constant variance (White test and Breusch-Pagan-Godfrey test), and normal arrangement (Jarque-Bera test). From the aspect of the evaluated coefficients, it can be stated that, except for the coefficient for the growth rate of total household loans, all other coefficients are statistically significant at varying degrees of significance (0.01, 0.05, or 0.1).

Such results are also confirmed by the GMM method, with the difference that with this method, the unemployment rate is statistically insignificant. The model estimated by the GMM method is also statistically significant and well-fitted. Additionally, in this model, the Sargan J-statistic shows that the instrumental variables are well chosen, namely, the instrumental variables used are consistent. According to this model's endogeneity test, the variables are thought to have a feedback relationship (the dependent and the two key independent variables) are not endogenous. Namely, the difference in the J-statistic is small (1.89), whereby it is not possible to reject the null hypothesis that the variables are exogenous at a significance level of 0.05.

⁶ Breusch, T. S. (1978). Testing for autocorrelation in dynamic linear model. *Australian Economic Papers*, 17(31), 334-355.

⁷ White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48(4), 817-838.

⁸ Breusch, T. S., & Pagan, A. R. (1979). A simple for heteroscedasticity and random coefficient variation. *Econometrica*, 47(5), 1287-1294.

⁹ Hansen, L. P. (1982). Large sample properties og generalized method of moments estimator. *Econometrica*, 50(4), 1029-1054.

¹⁰ Sargan, J. D. (1958). The estimation of economic relationships using instrumental variables. *Econometrica*, 26(3), 393-415.

¹¹ Baum, C. F., Schaffer, M. E., & Stillman, S. (2007). Enhanced routines for instrumental variables/GMM estimation and testing. *The Stat Journal*, 7(4), 465-506.

Furthermore, to check the cointegration between the dependent variables and regressors, the bound test evidence, long-run relationship (level equation), short-run dynamics (conditional ECM), and error correction term (Table 4), below.

Table 4. ARDL Long-Run and Short-Run Estimates for Household Final Consumption Expenditure (FCE_H)

Variable	Long-Run Coefficient	Short-Run Coefficient	Significance
CREDIT_H_G	0.1365	0.0994*	Short-run (10% level)
CREDIT_C_G	-0.1893	0.3551***	Short-run (1%)
LIR	1.2164	1.9381***	Short-run (1%)
REER	-0.3613	-0.3019	Not significant
FCE_GG_G	-0.8549 *	–	Long-run (10%)
OECD_GDP_G	-5.2676	-1.1270*	Short-run (10%)
GDP_G	-1.4932	–	Not significant
INF	-0.1083	0.3317**	Short-run (5%)
UN	1.1144 **	-0.7920	Long-run (5%)
Constant (C)	77.6806	–	Not significant
Error Correction Term (ECT)	-0.3580***	–	Significant (1%)
Note: Significance levels: $p < 0.01$ (***), $p < 0.05$ (**), $p < 0.10$ (*), Model: ARDL(1,1,1,1,1,0,1,1), Sample: 1996–2020, Obs = 22, F-statistic (Bounds Test) = 18.02 → cointegration confirmed			

Source: Author's calculations

The results of the ARDL model suggest the existence of a stable long-run relationship between household final consumption expenditure (FCE_H) and its explanatory variables. The bounds test confirms cointegration with a high F-statistic (18.02), exceeding the critical value at 1%, validating the use of the ARDL framework.

In the long run, increases in government final consumption expenditure (FCE_GG_G) and OECD GDP growth negatively influence household expenditure, suggesting a crowding-out effect and external sensitivity. On the other hand, unemployment (UN) exerts a strong positive long-run effect, possibly reflecting compensatory mechanisms such as transfers or social benefits.

In the short run, private sector credit (CREDIT_C_G), interest rates (LIR), and inflation (INF) are significant drivers of household consumption, indicating responsiveness to monetary and financial conditions. Notably, the error correction term (–0.358) confirms that approximately 36% of deviations from equilibrium are corrected annually, indicating a moderate speed of adjustment.

Regarding the second model, it is well-fitting and statistically significant. The F-statistic seen in the model is 20.83, while the adjusted coefficient of determination is 0.87. Also, this model, like the previous one, fully fulfills the assumptions of OLS, i.e., there is no autocorrelation and heteroskedasticity, the residuals have a normal distribution, and the model has a correct functional form.

Table 5. Evaluation of Model 2

GFCF (% of GDP) – 1 diff.	OLS model	GMM model 2
C	-3,699956 *	-3,894532 *
D_CREDIT_H_G	0,062667 *	0,082905 *
D_CREDIT_C_G	-0,118066 *	-0,114299 **
D_LIR	-1,37623 *	-1,264618 *
GDP_G	0,48121 *	0,478909 **

D_UN	-0,69272 *	-0,730951 *
SALDO	-0,218577 *	-0,26168 *
D_BUDGET	-0,75719 *	-0,823823 *
Sample	1998 - 2019	2000 - 2019
N	22	20
Coefficient of determination	0,91	0,91
Adjusted coefficient of determination	0,87	0,86
F-statistics	20,83 *	-
Durbin-Watson statistics	1,95	2,02
Ramsay RESET test	0,24	-
Jarque-Bera test	0,66	2
Breusch-Godfrey LM test (1st order)	0,02	-
Breusch-Godfrey LM test (2nd order)	3,3	-
White's test (no crossover data included)	6,89	-
Breusch-Pagan-Godfrey test	7,95	-
Instrument Rank	-	12
Sargan J-statistics	-	4,1
Endogeneity test (difference in J-stat.)	-	0,41
Note: *, **, and *** stand for statistical significance at the corresponding significance		

Source: Author's calculations

From the point of view of the estimated coefficients, statistically insignificant control variables are the public final consumption, inflation rate, and the money supply (M1). The key independent variables are statistically significant, with the coefficient of the change in household loans growth rate being positive, while the shift in the firm loan growth rate is negative. The obtained results are also confirmed by the GMM method, but here, as in the previous model, there is no feedback interaction between the main independent factors and the dependent variables, that is, loans obtained to households and companies are exogenous (the difference in the J-statistic is small and amounts to 0,41). In addition, the instrumental variables used are consistent, that is, Sargan J statistics is 4.1, while the null hypothesis of consistency of the instrumental variables is not rejected at a 0.05 level of significance.

The ARDL estimation (Table 6) confirms a long-run equilibrium relationship between gross fixed capital formation (GFCF) and its explanatory variables. The F-statistic (38.19) from the bounds test significantly exceeds critical thresholds, confirming the presence of cointegration.

Table 6. ARDL Long-Run and Short-Run Estimates for Gross Fixed Capital Formation (GFCF)

Variable	Long-Run Coefficient	Short-Run Coefficient	Significance
CREDIT_H_G	-0.0456	0.0323*	Short-run (10%)
CREDIT_C_G	0.0941	-0.1073***	Short-run (1%)
LIR	-0.2806 *	-1.3982***	Long-run (10%), Short-run (1%)
GDP_G	1.7014 **	0.2876**	Long-run (5%), Short-run (5%)
UN	0.2809*	-0.4236**	Long-run (10%), Short-run (5%)
BUDGET	-1.1662 **	-0.7498***	Long-run (5%), Short-run (1%)

SALDO	-0.5443 **	-0.2506***	Long-run (5%), Short-run (1%)
Constant (C)	3.3335	–	Not significant
Error Correction Term (ECT)	-0.3067***	–	Significant (1%)
Note: Significance levels: $p < 0.01$ (***), $p < 0.05$ (**), $p < 0.10$ (*), Model: ARDL(1,1,1,1,1,1,1), Sample: 1996–2020, Obs = 21, F-statistic (Bounds Test) = 38.19 → cointegration confirmed			

Source: Author's calculations

Long-run estimates reveal that economic growth (GDP_G) has a strong positive influence on GFCF, underlining the importance of macroeconomic expansion for investment. Fiscal variables, specifically budget deficit (BUDGET) and saldo, negatively affect capital formation, indicating potential crowding-out effects or fiscal instability concerns. The interest rate (LIR) also exerts a negative long-run effect, consistent with theoretical expectations.

In the short run, GDP growth, interest rates, credit variables, unemployment, and fiscal indicators significantly influence GFCF. Notably, the error correction term (–0.307) is statistically significant and negative, suggesting a 31% speed of adjustment toward long-run equilibrium annually.

5. Conclusions

Based on the theoretical model (Garcia-Escribano and Fei, 2015), two models have been defined regarding the impact of loans on households and firms, one for the final consumption of households and another for investments. The purpose of these models is to examine the influence of credit activity in the country regarding economic growth rates, and it is observed through two influencing channels. Moreover, regarding the frequency of increase in the aggregate credit of consumers and businesses, according to economic theory and empirical literature, several control variables are included in the models, which cover factors that may affect economic growth. Furthermore, both models are assessed using the generalized method of moments (GMM) and the ordinary least squares (OLS) technique due to the potential for a feedback relationship between credit activity and economic growth. The evaluated models are well-adjusted and statistically significant, and the results from the two evaluation techniques are completely consistent. OLS might be a better option because there is no feedback link between credit activity and economic development; those are exogenous.

The first difference approach is used to distinguish some of the variables since they are non-stationary, i.e., first-order integrated, and are therefore included in the models. Such a transformation helps to avoid the so-called "spurious regression" obtained by using non-stationary variables in a regression analysis. Also, differentiating the variables helps to remove possible multicollinearity between the independent variables. However, this way of transforming the variables also changes the way of interpreting the estimated coefficients, so when interpreting the coefficients from the model, we will stick to the direction of influence, that is, we will not attempt to quantify them. The ARDL bounds test confirms cointegration by assessing long-run relationships, short-run adjustments, and the significance of the error correction term in both models.

The first model, which focuses on household final consumption, indicates that the growth rate of firm loans has a bigger effect on the growth rate of household final consumption. In contrast, the growth rate of household loans has no statistically significant effect on final household consumption. The ($H1_0$), according to the data obtained, is rejected; that is, the rise of total household loans has a slower impact on GDP growth through consumption in North

Macedonia. This is supported by the fact that the rise in business lending to corporations is a measure of the expansion of economic activity. Stated differently, a rise in economic activity results in lower unemployment and higher salaries, which ultimately raise households' final consumption. Conversely, the expansion of lending to the populace may also indicate a rise in final consumption, particularly in the near term, but over time, the repayment of that loan would result in a decrease in household final consumption. Kharroubi & Kohlscheen (2017) suggest that an increase in the share of private consumption in GDP could be a leading indicator of a future slowdown in growth, especially if consumption-led expansions come as a result of growing imbalances and rising debt burdens. Economic growth is frequently threatened by high household debt service ratios, which frequently result in expensive deleveraging procedures. During consumption-led expansions, investment and net exports seem to contribute significantly less to growth, to the point that the greater contribution of private spending is more than compensated for (Kharroubi & Kohlscheen, 2017).

In the second model, the growth of lending to households affects investments with greater intensity, while the growth of lending to companies affects investments with less intensity. Therefore, the ($H2_0$), according to which the expansion of total household loans has a bigger impact on GDP growth through investments in North Macedonia, is not rejected. The logic here is the same as before, that is, lending to companies can seemingly increase investments in the short term, but due to the repayment of the debt in the long term, it causes their reduction. Contrary to this, lending to households will initiate increased final consumption in the short term, which is followed by a corresponding increase in investments.

It should be noted that the dependent variables in both models are given as a percentage (%) of GDP or as a share of GDP. So, the evaluated coefficients should be seen as a change in these variables in the GDP structure. Through this prism, the growth of household loans will not have an impact on the intensity of the growth of the final consumption of households in GDP, but on the other hand, it will lead to greater dynamics of investment growth. In other words, if we assume that lending to households will not affect the percentage of final consumption and, consequently, GDP in the long run, then, ceteris paribus, it will essentially result in a rise in the share of investments in the GDP structure. Hence, it is necessary to be especially careful when concluding that the obtained evaluated coefficients should not be explicitly linked to the growth or decrease of final consumption and investments. It is the same when it comes to lending to companies. Namely, the growth of the credit activity of the companies causes a growth with a higher dynamic of the participation of the final consumption of households in the structure of GDP, and at the same time a lower dynamic of the participation of the investments, which can be due to the multiplier effects of the investments, i.e. the growth of employment and the wages that cause it. These findings highlight the dual sensitivity of capital formation to macroeconomic performance and fiscal policy, implying the need for prudent financial and economic management to sustain investment levels.

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