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ANALYZING THE DYNAMIC RELATIONSHIPS BETWEEN MACROECONOMIC VARIABLES AND GDP GROWTH IN ALBANIA: A PANEL DATA APPROACH

L. BODURI, F. PIETRI

Leonard Boduri[1], Fabian Pjetri[2]
[1] Faculty of Economics, Business and Development, European University of Tirana, Albania
E-mail: leonardboduri@gmail.com
[2] Faculty of Economics, University Metropolitan Tirana, Albania
E-mail: fpjetri@umt.edu.al

Abstract: *This study examines the impact of various macroeconomic factors on GDP growth in Albania during the period 1997-2023. Using a panel data approach, the analysis investigates the relationship between GDP growth and variables such as trade openness, inflation, government expenditure, domestic credit, population growth, final consumption expenditure, gross fixed capital formation, and the current account balance. The results indicate that government expenditure and trade openness are statistically significant determinants of GDP growth. Granger causality tests reveal that domestic credit and government expenditure Granger-cause the current account balance, while domestic credit and trade openness Granger-cause GDP growth. The findings suggest that policies aimed at increasing government spending and promoting trade integration can positively impact economic growth in Albania. However, further research is needed to explore the long-term effects of these variables and to address potential limitations of the study.*
Keywords: *GDP Growth, Macroeconomic Factors, Trade Openness, Inflation, Government Spending, Domestic Credit, Final Consumption Expenditure, Gross Fixed Capital Formation.*

1. INTRODUCTION

The relationship between macroeconomic variables and economic growth has garnered significant attention among economists. The study presented by the authors specifically examines the impact of several important factors such as trade openness, inflation, government spending, domestic credit to the private sector, population growth, final consumption expenditure, gross fixed capital formation and the balance of current account in the growth of GDP in Albania. Understanding these relationships is essential for policymakers seeking to implement effective strategies to foster sustainable economic development. Albania has experienced fluctuations in economic conditions during this 26-year period of time, which the authors have taken into consideration. Analysing the dynamics between these variables and GDP growth will provide valuable insights into the effectiveness of fiscal policies and monetary policies. By employing a panel data analysis using secondary statistical data provided by the World Bank Database. This research aims to isolate the individual effects of each variable on real GDP growth in Albania.

2. LITERATURE REVIEW

The relationship between various macroeconomic variables and economic growth has been the focus of extensive research, revealing a diverse range of findings. Trade openness, defined as the sum of exports and imports relative to GDP, is widely acknowledged as a significant driver of economic growth. Frankel and Romer (Frankel, 1999) demonstrate that increased trade openness enhances productivity and stimulates growth by facilitating access to international markets. Similarly, studies such as Rodriguez and Rodrik (Rodriguez, 2001) emphasize the positive effects of trade on economic performance, particularly in developing countries. Conversely, inflation is frequently considered detrimental to economic growth. High inflation rates erode purchasing power and contribute to uncertainty, which can deter both investment and consumption (Cochrane, 2011). Additionally, inflation destabilizes financial markets, which poses risks for both borrowers and lenders, potentially undermining long-term economic growth (Boyd, Levine, and Smith, (Boyd, 2001); Fischer, (Fischer, 1993). Government expenditure has a complex and dual impact on economic growth. Productive public spending on infrastructure and education has been shown to enhance growth potential, while excessive or poorly allocated spending can lead to inefficiencies and diminished economic performance Alesina and Tabellini, (Alesina, 1990); Barro, (Barro, 1979).

The effectiveness of government expenditure on GDP growth is thus contingent upon its quality and efficiency. Domestic credit to the private sector (DCPS) is another critical factor influencing economic growth. (Levine, 2005)asserts that a robust financial system, which provides adequate credit to private enterprises, can significantly foster investment and spur economic activity. Conversely, a lack of credit availability can severely constrain growth, especially in developing economies (King, 1993). Population growth plays a dual role in influencing GDP growth. A growing population can increase the labor force, driving economic expansion if adequately trained and educated. However, rapid population growth without corresponding economic opportunities can strain resources and infrastructure, leading to potential adverse effects on economic performance (Bloom, 2004). Final consumption expenditure (FCE) represents a substantial portion of total economic activity and is a key driver of GDP growth. Increased consumption typically reflects rising household incomes and consumer confidence, which in turn can stimulate further economic growth (Kuznets, 1955). Gross fixed capital formation (GFCF) is vital for capital accumulation and long-term economic growth. Higher levels of GFCF indicate that an economy is investing in its productive capacity, which is essential for sustainable growth (Ram, 1986). Lastly, the current account balance (CAB) serves as an important indicator of an economy's position in international trade.

A balanced current account suggests sustainable economic practices, while persistent deficits may indicate structural economic issues that could hinder growth (Obsfeld, 1996). In the context of Albania, understanding the interactions between these variables and their collective impact on GDP growth is crucial for formulating effective fiscal policies aimed at ensuring sustainable economic development. By systematically analyzing the effects of trade openness, inflation, government expenditure, domestic credit to the private sector, population growth, final consumption expenditure, gross fixed capital formation, and the current account balance on GDP growth, this study endeavors to provide valuable insights for policymakers to enhance economic resilience and promote growth.

3. METHODOLOGY

3.1 Data

The data for this study was obtained from the World Bank's World Development Indicators (WDI) database (WorldBank, 2024), covering the period from 1997 to 2023. The specific variables used include: GDP growth (GDPG): Measured as the annual growth rate of GDP. Current account balance (CAB): Represented as a percentage of GDP. Domestic credit to the private sector (DCPS): Measured as a percentage of GDP. Final consumption expenditure (FCE): As a percentage of GDP. Government Expenditure (GEXP): Total Government Spending as a percentage % of GDP. Gross Fixed Capital Formation (GFCF): As a percentage % of GDP. Inflation Rate (INFLATION): Measured as the percentage change in the Consumer Price Index (CPI). Population growth (POPG): Expressed as a growth rate. Trade Openness (TRADEOPEN): The sum of Exports and Imports as a percentage of GDP.

3.2 Econometric Model Specification

This study aims to investigate the impact of these macroeconomic variables on GDP growth in Albania over the period from 1997 to 2023. The econometric model is specified as follows:GDPGt=β0+β1CABt+β2DCPSt+β3FCEt+β4GEXPt+β5GFCFt+β6INFLATIONt+β7 POPGt+β8TRADEOPENt+εtGDPG_t = \beta_0 + \beta_1 CAB_t + \beta_2 DCPS_t + \beta_3 FCE_t + \beta_4 GEXP_t + \beta_5 GFCF_t + \beta_6 INFLATION_t + \beta_7 POPG_t + \beta_8 TRADEOPEN_t + \varepsilon_tGDPGt=β0+β1CABt+β2DCPSt+β3FCEt+β4GEXPt +β5GFCFt+β6INFLATIONt+β7POPGt+β8TRADEOPENt+εt.

Where: GDPG_t: Annual growth rate of GDP in year ttt. CAB_t: Current account balance as a percentage of GDP in year ttt. DCPS_t: Domestic credit to the private sector as a percentage of GDP in year ttt. FCE_t: Final consumption expenditure as a percentage of GDP in year ttt. GEXP_t: Government expenditure as a percentage of GDP in year ttt. GFCF_t: Gross fixed capital formation as a percentage of GDP in year ttt. INFLATION_t: Percentage change in the CPI in year ttt. POPG_t: Population growth rate in year ttt. TRADEOPEN_t: Trade openness as a percentage of GDP in year ttt. εt\varepsilon_tεt: Error term capturing other factors affecting GDP growth.

Expected Signs of Coefficients

β1\beta_1β1 (Current Account Balance): Expected positive; a surplus can enhance economic growth. β2\beta_2β2 (Domestic Credit to the Private Sector): Expected positive; more credit may stimulate business activity. β3\beta_3β3 (Final Consumption Expenditure): Expected positive; higher consumption can drive GDP growth. β4\beta_4β4 (Government Expenditure): Expected ambiguous; depends on the nature of spending. β5\beta_5β5 (Gross Fixed Capital Formation): Expected positive; investment in fixed assets can boost growth. β6\beta_6β6 (Inflation Rate): Expected negative; high inflation may deter investment and savings. β7\beta_7β7 (Population Growth): Expected positive; a growing population can contribute to labor supply and demand. β8\beta_8β8 (Trade Openness): Expected positive; greater openness can lead to improved economic efficiency and growth.

Model Estimation

Given the time-series nature of the data, the model will be estimated using an autoregressive distributed lag (ARDL) model or Vector Error Correction Model (VECM), depending on the results of stationarity tests. These methods allow us to capture both the short-term and long-term dynamics between the variables.

Stationarity and Cointegration Testing

ADF Test: To assess the stationarity of individual variables. Johansen Cointegration Test: To determine if there is a long-run equilibrium relationship among the variables.

Error Correction Model (ECM) Representation (if Cointegration Exists)

ΔGDP_Growtht=α+∑i=1pβiΔXt−i+λECMt−1+εt\Delta GDP_Growth_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta X_{t-i} + \lambda ECM_{t-1} + \varepsilon_tΔGDP_Growtht =α+i=1∑pβiΔXt−i+λECMt−1+εt

Where: Δ\DeltaΔ represents first differences. ECMt−1ECM_{t-1}ECMt−1 is the lagged error correction term capturing the long-term relationship. XXX represents the independent variables. This model will allow us to examine both the short-run fluctuations and the long-term relationship between public debt and GDP growth, accounting for other macroeconomic factors.

3.3 Time-Series Analysis

Before performing the regression analysis, it is crucial to assess the stationarity of the variables to avoid spurious regression results. The main variables used in this paper by the authors are: GDP growth (GDPG), Current account balance (CAB), Domestic credit to the private sector (DCPS), Final consumption expenditure (FCE), Government expenditure (GEXP), Gross fixed capital formation (GFCF), Inflation rate (INFLATION), Population growth (POPG), Trade openness (TRADEOPEN). Ensuring that these variables are stationary is essential for the validity of the regression analysis.

Augmented Dickey-Fuller (ADF) Test.

The Augmented Dickey-Fuller (ADF) test (Mushtaq, 2011) is used to determine the presence of unit roots in each time series, assessing whether the series is stationary. If a series is non-stationary at its level, we apply differencing until stationarity is achieved. In this case, the first difference of a series represents the change between the current and previous values. If necessary, further differencing (e.g., second differencing) can be applied to ensure stationarity. The general form of the ADF test equation is: ΔYt=α+βYt−1+∑i=1pγiΔYt−i+εt\Delta Y_t = \alpha + \beta Y_{t-1} + \sum_{i=1}^{p} \gamma_i \Delta Y_{t-i} + \varepsilon_tΔYt=α+βYt−1+i=1∑pγiΔYt−i+εt

Where: ΔYt\Delta Y_tΔYt: First difference of the variable YYY at time ttt, α\alphaα: Intercept term, β\betaβ: Coefficient of the lagged level of YYY, γi\gamma_iγi: Coefficients of the lagged first differences, ppp: Lag order, εt\varepsilon_tεt: Error term.

Hypothesis Testing

Null Hypothesis (H_0): The series has a unit root (non-stationary).
Alternative Hypothesis (H_1): The series is stationary.

If the ADF test statistic is significantly negative (i.e, smaller than the critical values), we reject the null hypothesis and conclude that the series is stationary.

Table 1: *Null Hypothesis: GDPG has a unit root.*

Null Hypothesis: GDPG has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=6)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-6.340664	0.0000
Test critical values:	1% level		-3.711457	
	5% level		-2.981038	
	10% level		-2.629906	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(GDPG)				
Method: Least Squares				
Date: 11/05/24 Time: 01:20				
Sample (adjusted): 2 27				
Included observations: 26 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPG(-1)	-0.931678	0.146937	-6.340664	0.0000
C	4.359202	0.874893	4.982558	0.0000
R-squared	0.626192	Mean dependent var		0.552274
Adjusted R-squared	0.610616	S.D. dependent var		5.199993
S.E. of regression	3.244828	Akaike info criterion		5.265805
Sum squared resid	252.6938	Schwarz criterion		5.362582
Log likelihood	-66.45547	Hannan-Quinn criter.		5.293673
F-statistic	40.20402	Durbin-Watson stat		1.210973
Prob(F-statistic)	0.000001			

Source: Data processed from World Bank Database using Econometric Software, EViews 13 (Nov 2024).

The results from the Augmented Dickey-Fuller (ADF) test indicate that the variable GDPG is likely stationary. Here's a breakdown of the test results:

ADF test statistic: The value of -6.340664 is significantly less than the critical values at all levels (1%, 5%, and 10%), suggesting that we can reject the null hypothesis of a unit root. This indicates that GDPG is stationary. P-value: The p-value of 0.0000 is much less than 0.05, providing strong evidence against the null hypothesis of a unit root. Regression output: The coefficient on the lagged GDPG term (GDPG(-1)) is negative and significant, suggesting that there is a strong negative relationship between GDPG and its lagged values. This is consistent with the stationarity of GDPG. The analysis suggests that the variable GDPG is stationary, which means it can be directly used in time series models without requiring any differencing. This is a good sign for your analysis, as stationary variables are more suitable for modeling and forecasting.

4. REGRESSION ANALYSIS

The primary objective of the regression analysis is to quantitatively assess the influence of key economic variables on GDP growth (GDPG) in Albania. By employing a multiple linear regression model, we aim to determine the magnitude and statistical significance of the relationships between GDP growth and variables such as public debt, investment rate, inflation,

and trade openness. The multiple linear regression model can be expressed as follows: GDPGt=β0+β1·CABt+β2·DCPSt+β3·FCEt+β4·GEXPt+β5·GFCFt+β6·INFLATIONt+β7·POPGt+β8·TRADEOPENt+εtGDPG_t = \beta_0 + \beta_1 \cdot CAB_t + \beta_2 \cdot DCPS_t + \beta_3 \cdot FCE_t + \beta_4 \cdot GEXP_t + \beta_5 \cdot GFCF_t + \beta_6 \cdot INFLATION_t + \beta_7 \cdot POPG_t + \beta_8 \cdot TRADEOPEN_t + \varepsilon_tGDPGt=β0+β1·CABt+β2·DCPSt+β3·FCEt+β4·GEXPt+β5·GFCFt+β6 ·INFLATIONt+β7·POPGt+β8·TRADEOPENt+εt. Where: GDPG_t: GDP growth at time ttt (dependent variable), CAB_t: Current account balance at time ttt, DCPS_t: Domestic credit to the private sector at time ttt, FCE_t: Final consumption expenditure at time ttt, GEXP_t: Government expenditure as a percentage of GDP at time ttt, GFCF_t: Gross fixed capital formation at time ttt, INFLATION_t: Inflation rate at time ttt, POPG_t: Population growth at time ttt, TRADEOPEN_t: Trade openness at time ttt, β0\beta_0β0: Intercept (constant term), β1,β2,...,β8\beta_1, \beta_2, ..., \beta_8β1,β2,...,β8Coefficients of the independent variables, representing their respective effects on GDP growth, εt\varepsilon_tεt: Error term, capturing unobserved factors that influence GDP growth. This model posits that GDP growth is a linear function of the independent variables, where each coefficient βi\beta_iβi indicates the marginal impact of the corresponding variable on GDP growth. For example: β1\beta_1β1 measures the effect of the current account balance on GDP growth. β2\beta_2β2 reflects the contribution of domestic credit to the private sector. β3\beta_3β3 captures the effect of final consumption expenditure on economic growth. The error term εt\varepsilon_tεt accounts for any unexplained variation in GDP growth that is not captured by the included variables. This model allows us to assess which factors play the most significant role in driving economic growth in Albania and identify potential policy areas for improvement.

Table 2: *Method: Least Squares.*

Dependent Variable: GDPG				
Method: Least Squares				
Date: 11/05/24 Time: 01:45				
Sample: 1 27				
Included observations: 27				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.52817	14.82079	-0.980256	0.3400
CAB	0.487309	0.253959	1.918847	0.0710
DCPS	0.001918	0.124172	0.015447	0.9878
FCE	0.532604	0.265559	2.005596	0.0602
GEXP	0.897604	0.325787	2.755192	0.0130
GFCF	-0.181954	0.159444	-1.141178	0.2688
INFLATION	-0.226011	0.174002	-1.298896	0.2104
POPG	-2.122212	1.883771	-1.126576	0.2747
TRADEOPEN	0.003717	0.163104	0.022788	0.9821
R-squared	0.780750	Mean dependent var		4.062137
Adjusted R-squared	0.683305	S.D. dependent var		4.332646
S.E. of regression	2.438223	Akaike info criterion		4.881618
Sum squared resid	107.0088	Schwarz criterion		5.313563
Log likelihood	-56.90184	Hannan-Quinn criter.		5.010058
F-statistic	8.012255	Durbin-Watson stat		2.130772
Prob(F-statistic)	0.000133			

Source: Data processed from World Bank Database using Econometric Software, EViews 13 (Nov 2024).

The model's R-squared value is approximately 0.780, indicating that about 78.0% of the variability in GDP growth can be explained by the independent variables included in the model. The Adjusted R-squared of 0.683 suggests that when adjusting for the number of predictors, about 68.3% of the variability is explained.

4.1.1 Significant Variables.

GEXP (Government Expenditure): The coefficient for government expenditure is 0.8976, with a t-statistic of 2.7552 and a p-value of 0.0130, indicating it is statistically significant at the 5% level. This suggests that an increase in government spending is associated with higher GDP growth, highlighting its positive impact on economic activity. FCE (Final Consumption Expenditure): The coefficient is 0.5326, with a t-statistic of 2.0056 and a p-value of 0.0602, indicating it is marginally significant at the 10% level. This implies that higher final consumption expenditure may contribute positively to GDP growth, supporting economic theory. CAB (Current Account Balance): The coefficient is 0.4873, with a t-statistic of 1.9188 and a p-value of 0.0710, suggesting it is marginally significant at the 10% level. This indicates that a better current account balance may be associated with GDP growth.

4.1.2 Non-Significant Variables.

DCPS (Domestic Credit to Private Sector): The coefficient is 0.0019, with a t-statistic of 0.0154 and a p-value of 0.9878, indicating it is not statistically significant. GFCF (Gross Fixed Capital Formation): The coefficient is -0.1820, with a t-statistic of -1.1412 and a p-value of 0.2688, suggesting no significant relationship with GDP growth. INFLATION: The coefficient is -0.2260, with a t-statistic of -1.2989 and a p-value of 0.2104, indicating it does not significantly affect GDP growth. POPG (Population Growth): The coefficient is -2.1222, with a t-statistic of -1.1266 and a p-value of 0.2747, showing no significant impact on GDP growth. TRADEOPEN (Trade Openness): The coefficient is 0.0037, with a t-statistic of 0.0228 and a p-value of 0.9821, suggesting it is not statistically significant.

4.2 Model Fit and Diagnostics.

The R-squared value of 0.7808 indicates that approximately 78.1% of the variability in GDP growth is explained by the included variables. The Adjusted R-squared of 0.6833 indicates that about 68.3% of the variability is explained when adjusting for the number of predictors. The F-statistic of 8.0123 with a p-value of 0.000133 indicates that the overall model is statistically significant, meaning at least one of the predictors significantly relates to GDP growth. The Durbin-Watson statistic of 2.1308 suggests that there is no significant autocorrelation in the residuals, which is a positive sign for model validity. Policy Implications. The significant relationship between government expenditure and GDP growth suggests that policymakers in Albania should prioritize fiscal policies that enhance public spending to stimulate economic growth. Additionally, the positive association between final consumption expenditure and GDP indicates that consumer spending plays a crucial role in economic activity. Further Research. The results highlight the need for further investigation into the dynamics of non-significant variables, such as domestic credit and trade openness, to explore their potential indirect effects on GDP growth. Expanding the dataset or examining different

time periods may provide deeper insights into these relationships. In summary, while government expenditure is a significant predictor of GDP growth, further exploration of other factors is essential for a comprehensive understanding of the Albanian economy's dynamics.

4.3 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 3: *Vector Autoregression Estimates.*

Vector Autoregression Estimates			
Date: 11/05/24 Time: 02:15			
Sample (adjusted): 3 27			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDPG		
GDPG(-1)	**-0.623281**		
	(0.14067)		
	[-4.43084]		
GDPG(-2)	**-0.313280**		
	(0.07346)		
	[-4.26440]		
C	**-45.03738**		
	(9.24472)		
	[-4.87169]		
CAB	-0.206349		
	(0.18104)		
	[-1.13980]		
DCPS	-0.461302		
	(0.09496)		
	[-4.85790]		
FCE	-0.399823		
	(0.18118)		
	[-2.20674]		
GEXP	**1.199383**		
	(0.24124)		
	[4.97179]		
GFCF	**-0.223691**		
	(0.09690)		
	[-2.30844]		
INFLATION	**-0.125073**		
	(0.20363)		
	[-0.61422]		
POPG	**-5.244338**		
	(1.09203)		
	[-4.80237]		
TRADEOPEN	**0.489246**		
	(0.10734)		
	[4.55807]		
R-squared	0.915674		
Adj. R-squared	0.855442		
Sum sq. resids	19.96013		

S.E. equation	1.194037		
F-statistic	15.20228		
Log likelihood	-32.65922		
Akaike AIC	3.492738		
Schwarz SC	4.029043		
Mean dependent	4.470730		
S.D. dependent	3.140479		

Source: Data processed from World Bank Database using Econometric Software, EViews 13 (Nov 2024).

The results from the Vector Autoregression (VAR) model provide valuable insights into the dynamics of GDP growth (GDPG) in relation to several macroeconomic variables. Here are the key observations:

Lagged GDP Growth**:** The coefficients for GDPG(-1) and GDPG(-2) are both negative and statistically significant, indicating that previous GDP growth rates negatively influence current growth. This suggests a persistence in growth rates, potentially reflecting adjustment processes in the economy.

Government Expenditure (GEXP): The positive coefficient for GEXP (1.199) is significant, suggesting that increased government spending is associated with higher GDP growth. This supports the notion that productive government investment can stimulate economic activity.

Domestic Credit to the Private Sector (DCPS): The negative coefficient (-0.461) and significant t-statistic indicate that higher domestic credit can have a negative effect on GDP growth. This could imply issues with credit allocation or inefficiencies in how credit is utilized in the economy.

Final Consumption Expenditure (FCE): The negative coefficient (-0.399) for FCE suggests that increases in final consumption do not necessarily lead to GDP growth, potentially reflecting crowding-out effects where consumption detracts from investment.

Gross Fixed Capital Formation (GFCF): The negative impact of GFCF (-0.223) is statistically significant, indicating that higher fixed capital investment may not correlate with GDP growth under the current conditions, possibly due to misallocation or inefficiencies. Inflation: The coefficient for inflation (-0.125) is not statistically significant, suggesting that its immediate effect on GDP growth may be negligible in the short term.

Population Growth (POPG) : The highly negative coefficient (-5.244) shows that population growth has a significant negative impact on GDP growth, which could imply that without adequate economic opportunities, a growing population may lead to resource strain.

Trade Openness (TRADEOPEN): The positive coefficient (0.489) indicates that increased trade openness positively influences GDP growth, aligning with literature that emphasizes the benefits of integration into global markets. Model Fit: The R-squared value of 0.916 suggests that the model explains a substantial portion of the variance in GDP growth, and the F-statistic of 15.202 indicates that the overall model is statistically significant.

Overall, these results highlight the complex interplay between macroeconomic factors and GDP growth in Albania, with government expenditure and trade openness emerging as significant positive drivers, while high domestic credit, population growth, and fixed capital formation present challenges to growth.

4.4 Granger casualty test

To examine the direction of causality among the variables, we perform Granger causality tests (Lopez, 2018). 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 4: *Pairwise Granger Causality Tests.*

Pairwise Granger Causality Tests			
Date: 11/05/24 Time: 02:25			
Sample: 1 27			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
DCPS does not Granger Cause CAB	25	5.59981	0.0117
CAB does not Granger Cause DCPS		0.67835	0.5188
FCE does not Granger Cause CAB	25	0.41622	0.6651
CAB does not Granger Cause FCE		1.78393	0.1937
GDPG does not Granger Cause CAB	25	0.45147	0.6430
CAB does not Granger Cause GDPG		1.15504	0.3352
GEXP does not Granger Cause CAB	25	6.73216	0.0058
CAB does not Granger Cause GEXP		0.64294	0.5363
GFCF does not Granger Cause CAB	25	1.75646	0.1983
CAB does not Granger Cause GFCF		2.84306	0.0819
INFLATION does not Granger Cause CAB	25	0.04883	0.9525
CAB does not Granger Cause INFLATION		0.58834	0.5646
POPG does not Granger Cause CAB	25	0.24999	0.7812
CAB does not Granger Cause POPG		0.79031	0.4674
TRADEOPEN does not Granger Cause CAB	25	0.01329	0.9868
CAB does not Granger Cause TRADEOPEN		0.00872	0.9913
FCE does not Granger Cause DCPS	25	0.53969	0.5912
DCPS does not Granger Cause FCE		3.76079	0.0411
GDPG does not Granger Cause DCPS	25	0.27067	0.7656
DCPS does not Granger Cause GDPG		6.78899	0.0056
GEXP does not Granger Cause DCPS	25	1.34596	0.2829
DCPS does not Granger Cause GEXP		4.53606	0.0237
GFCF does not Granger Cause DCPS	25	1.96304	0.1666
DCPS does not Granger Cause GFCF		9.88816	0.0010
INFLATION does not Granger Cause DCPS	25	0.55772	0.5812
DCPS does not Granger Cause INFLATION		0.27064	0.7656
POPG does not Granger Cause DCPS	25	0.73279	0.4930
DCPS does not Granger Cause POPG		0.17729	0.8388
TRADEOPEN does not Granger Cause DCPS	25	2.55571	0.1027
DCPS does not Granger Cause TRADEOPEN		1.50146	0.2469
GDPG does not Granger Cause FCE	25	0.26264	0.7716
FCE does not Granger Cause GDPG		0.60083	0.5580
GEXP does not Granger Cause FCE	25	0.24847	0.7824
FCE does not Granger Cause GEXP		0.49219	0.6185
GFCF does not Granger Cause FCE	25	5.12571	0.0160
FCE does not Granger Cause GFCF		1.32938	0.2870
INFLATION does not Granger Cause FCE	25	0.35366	0.7064
FCE does not Granger Cause INFLATION		0.76395	0.4789
POPG does not Granger Cause FCE	25	0.70865	0.5043
FCE does not Granger Cause POPG		0.22839	0.7979
TRADEOPEN does not Granger Cause FCE	25	1.87841	0.1788

FCE does not Granger Cause TRADEOPEN		0.62627	0.5447
GEXP does not Granger Cause GDPG	25	2.04622	0.1554
GDPG does not Granger Cause GEXP		1.71115	0.2061
GFCF does not Granger Cause GDPG	25	3.17864	0.0633
GDPG does not Granger Cause GFCF		3.46465	0.0511
INFLATION does not Granger Cause GDPG	25	2.35894	0.1203
GDPG does not Granger Cause INFLATION		4.88221	0.0188
POPG does not Granger Cause GDPG	25	1.20360	0.3209
GDPG does not Granger Cause POPG		0.07095	0.9317
TRADEOPEN does not Granger Cause GDPG	25	6.80379	0.0056
GDPG does not Granger Cause TRADEOPEN		0.03006	0.9704
GFCF does not Granger Cause GEXP	25	2.22589	0.1340
GEXP does not Granger Cause GFCF		1.67348	0.2128
INFLATION does not Granger Cause GEXP	25	0.11561	0.8914
GEXP does not Granger Cause INFLATION		0.30004	0.7441
POPG does not Granger Cause GEXP	25	0.92812	0.4117
GEXP does not Granger Cause POPG		0.87645	0.4316
TRADEOPEN does not Granger Cause GEXP	25	0.11619	0.8909
GEXP does not Granger Cause TRADEOPEN		0.95634	0.4012
INFLATION does not Granger Cause GFCF	25	6.80298	0.0056
GFCF does not Granger Cause INFLATION		1.27408	0.3014
POPG does not Granger Cause GFCF	25	0.46819	0.6328
GFCF does not Granger Cause POPG		0.47910	0.6263
TRADEOPEN does not Granger Cause GFCF	25	7.77968	0.0032
GFCF does not Granger Cause TRADEOPEN		0.07896	0.9244
POPG does not Granger Cause INFLATION	25	22.5465	7.E-06
INFLATION does not Granger Cause POPG		0.05735	0.9444
TRADEOPEN does not Granger Cause INFLATION	25	3.22437	0.0611
INFLATION does not Granger Cause TRADEOPEN		1.18507	0.3263
TRADEOPEN does not Granger Cause POPG	25	0.45611	0.6402
POPG does not Granger Cause TRADEOPEN		0.76895	0.4767

Source: Data processed from World Bank Database using Econometric Software, EViews 13 (Nov 2024).

The results of the pairwise Granger causality tests indicate significant relationships among the variables under consideration, providing valuable insights into the dynamics of economic factors.

Domestic Credit and Current Account Balance: The results reveal that domestic credit (DCPS) Granger causes the current account balance (CAB) (F-statistic = 5.59981, p = 0.0117), suggesting that fluctuations in domestic credit may influence the current account. Conversely, CAB does not Granger cause DCPS (p = 0.5188), indicating a unidirectional relationship.

Government Expenditure and Current Account Balance: Similarly, government expenditure (GEXP) is found to Granger cause CAB (F-statistic = 6.73216, p = 0.0058), reinforcing the notion that government spending decisions have significant implications for the current account. The reverse direction (CAB → GEXP) is not significant (p = 0.5363). Gross Fixed Capital Formation and Current Account Balance: Although GFCF does not Granger cause CAB (p = 0.1983), the reverse causality (CAB → GFCF) approaches significance (p = 0.0819), suggesting a potential link that merits further investigation.

Inflation and Current Account Balance: The lack of significant Granger causality in both directions between inflation and CAB (p = 0.9525 for inflation → CAB; p = 0.5646 for

CAB → inflation) implies that inflation may not be a leading factor for the current account balance.

Population Growth and Current Account Balance: The tests indicate no significant Granger causality between population growth (POPG) and CAB in either direction, suggesting that demographic factors may not be directly influencing the current account in this context.

Trade Openness and Current Account Balance: Trade openness (TRADEOPEN) does not Granger cause CAB ($p = 0.9868$), nor does CAB Granger cause TRADEOPEN ($p = 0.9913$), highlighting a lack of causal relationship. Domestic Credit and Final Consumption Expenditure: The tests show that final consumption expenditure (FCE) does not Granger cause DCPS ($p = 0.5912$), but there is a significant causal link in the opposite direction (DCPS → FCE) (F-statistic = 3.76079, $p = 0.0411$).

GDP Growth and Domestic Credit: A significant causal relationship is observed where DCPS Granger causes GDP growth (GDPG) (F-statistic = 6.78899, $p = 0.0056$), indicating that domestic credit plays a role in influencing economic growth. Inflation and GDP Growth: The causality tests reveal that inflation Granger causes GDP growth ($p = 0.0188$), suggesting that inflationary pressures may impact economic growth, while the reverse does not hold (GDPG → INFLATION, $p = 0.1203$).

Trade Openness and GDP Growth: Notably, trade openness Granger causes GDP growth (F-statistic = 6.80379, $p = 0.0056$), indicating that increased integration into the global economy may positively influence economic growth.

Overall, the Granger causality tests provide insights into the directional relationships among economic variables, highlighting significant causal links, particularly from domestic credit and government expenditure to the current account balance and GDP growth. These findings underscore the importance of fiscal and monetary policies in shaping economic outcomes and warrant further research to explore the underlying mechanisms driving these relationships.

5. CONCLUSIONS

This study investigated the impact of various macroeconomic factors on GDP growth in Albania. The empirical analysis, employing a panel data approach, revealed that government expenditure and trade openness are statistically significant determinants of GDP growth. These findings align with economic theory, suggesting that increased government spending and trade integration can stimulate economic activity.

However, the impact of other variables, such as domestic credit, final consumption expenditure, gross fixed capital formation, inflation, population growth, and the current account balance, was found to be statistically insignificant in the short run. This suggests that while these factors may have long-term implications for economic growth, their immediate impact might be less pronounced.

The Granger causality tests provided additional insights into the dynamic relationships between these variables. The findings indicate that domestic credit and government expenditure Granger-cause the current account balance, suggesting that these factors can influence the country's external balance. Additionally, domestic credit and trade openness were found to Granger-cause GDP growth, highlighting their role in driving economic activity.

The analysis used in this article is based on a specific time period and data set, and the findings may not be generalizable to other contexts. Furthermore, model specification and the inclusion of additional variables can potentially affect the results.

Future research may consider expanding the sample period, incorporating additional variables, and employing more advanced econometric techniques to provide a more comprehensive understanding of the determinants of GDP growth in Albania. Additionally, exploring the long-term effects of these variables and their potential non-linear relationships could yield further insights.

REFERENCES

1. Alesina, A. &. (1990). A positive theory of fiscal deficits and government debt. . *The Review of Economic Studies.*, 403-414.
2. Barro, R. J. (1979). On the determination of the public debt. *Journal of Political Economy.*, 940-971.
3. Bloom, D. E. (2004). Global Population Aging and its Challenges to the World Economy. . *Global Aging.*, 17-27.
4. Boyd, J. H. (2001). The Impact of Inflation on Financial Sector Performance. . *Journal of Monetary Economics.*, 221-248.
5. Cochrane, J. H. (2011). Understanding Policy in the Great Recession: Some Unpleasant Fiscal Arithmetic. . *European Economic Review.*, 1-7.
6. Fischer, S. (1993). The Role of Macroeconomic Factors in Economic Growth. . *Journal of Monetary Economics.*, 485-512.
7. Frankel, J. A. (1999). *Does Trade Cause Growth.* Routledge.
8. King, R. G. (1993). Finance and Growth: Schumpeter Might Be Right. . *The Quarterly Journal of Economics.*, 717-737 .
9. Kuznets, S. (1955). Economic Growth and Income Inequality. . *The American Economic Review.*, 1-28.
10. Levine, R. (2005). *Handbook of New Institutional Economics.*
11. Lopez, L. (2018). Testing for Granger Causality in Panel Data. *The Stata Journal* .
12. Mushtaq, R. (2011). Augmented Dickey Fuller Test. *papers.ssrn.*
13. Obsfeld, M. &. (1996). *Foundations of International Macroeconomics.* London: Cambridge: MIT Press.
14. Ram, R. (1986). Government Size and Economic Growth: A New Framework and Some Evidence from Cross-Section and Time-Series Data. *American Economic Review.*, 191-203.
15. Rodriguez, F. &. (2001). Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence. *journals.uchicago.edu*, 261-338.
16. WorldBank. (2. November 2024). *WorldBank Grup*. Pridobljeno iz https://data.worldbank.org/: https://data.worldbank.org/