

The Impact of Bank Credit to the Public and Private Sector on the Economic Growth in Albania

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Abstract

The Vector Error Correction Model uses bank credit to the public sector and bank credit to the private sector as variables co-integrated with GDP growth. Finding the short-term and long-term causes of the relationship between credit activity and economic growth in Albania is the primary goal of this paper. The independent variable of bank credit to the public sector expressed as a percentage of GDP will be the focus of the econometric model. The additional independent factors taken into account are: bank credit to the private sector as percent of GDP; deposits as percent of GDP; roe; non-performing loans and the Herfindahl index. The VEC model concluded in a positive relationship between economic growth and public credit, deposits and non-performing loans. Otherwise, the results displayed a negative link between economic growth and private credit, ROE and the Herfindahl index.

Key words: Albania, bank credit, economic growth, Vector Error Correction Model

J.E.L. classification: C1, G21

1. Introduction

The lending of an economy is also considered as one of the indicators of the well-being of that country. The more credit is given to the economy, the more investment opportunities and new jobs will be generated. Bank credit is essential for the economy of Albania, a country that underwent multiple stages of development following the overthrow of the prior political and economic order. In particular, bank credit to the private sector has been a good impetus for economic development.

The Albanian banking system plays an important role in public investment lending. The implementation of the strategy for the public sector has led to the use of several new products to increase efficiency, such as loans for government investments and loans for public corporations. Within the governing framework, public finance is a priority issue, for development and trust reasons. Efficiency and effectiveness in public spending are of particular importance not only in reducing poverty, but also good management of public goods helps in the economic development of the country.

Finding the short-term and long-term causes of the relationship between credit activity and economic growth in Albania is the primary goal of this paper. The Vector Error Correction Model uses bank credit to the public sector and bank credit to the private sector as variables co-integrated with GDP growth. The independent variable of bank credit to the public sector expressed as percent of GDP will be the focus of the econometric model. The additional independent factors taken into account are: bank credit to the private sector as percent of GDP; deposits as percent of GDP; roe; non-performing loans and the Herfindahl index.

With a focus on the banking industry in Albania, this research will significantly contribute to the enrichment of the empirical literature on finance and credit activity.

2. Literature review

According to the authors Spulbăr and Nițoi (2011, p.43), "*banks are of particular importance for economic growth, credit allocation, financial stability, as well as for the competitiveness and development of companies.*" In 2010, Spulbăr and Nițoi estimated an econometric model that intercepts determinants of the evolution of non-government credit in Romania. The authors noted that economic growth and real estate prices had the most significant impact on non-government credit.

The majority of empirical investigations (Fink, Haiss and Vukšić (2005), etc.) typically come to the conclusion that the rise of the financial sector speeds up economic expansion. The work of Dima Bogdan and Opreș Petru Eugen (2014) analyzes the relationship between financial intermediation and economic growth of developing economic systems. First, using the data set from 28 countries, between 2001 and 2010 the authors defined a financial intermediation indicator using the EFA method. The result suggests that financial intermediation as part of financial development is positively associated with economic growth. Emecheta and Ibe (2014) in their study were based on time series from 1960-2010 and concluded on a positive and significant link between bank credit and the banking sector, money in general and economic growth. The authors emphasize the importance of consolidating and recapitalizing the banking sector. Zeqiraj et al. (2020) found that the performance of the banking sector had a favorable and significant impact on economic growth in a total of 13 nations in South-Eastern Europe between 2000 and 2015 by using the generalized method of moments to panel data.

Iwanicz-Drozdowska et al., (2019) have confirmed a negative impact of bank credit on economic growth for 14 countries of Central, Eastern and South-Eastern Europe for the years 1995-2015. An indirect influence of bank credit on economic growth was also found in the example of European Union countries (EU-27) for the period 1990-2010 (Leitão, 2012).

After studying the factors related to credit activity that influence economic growth, I conducted (2022) an econometric case study to make a quantitative analysis of the relationship between credit activity and economic growth for six developed countries, resulting in a positive relationship between economic growth and bank credit to the private sector, the real interest rate and ROE and in an indirect correlation between the dependent variable and the determinants of bank credit to government and public enterprises and non-performing loans.

My paper, which was published in April 2022, used a Vector Error Correction Model to estimate through empirical analysis the long- and short-term effects of the influence of credit activity and some bank-specific determinants on economic growth in Albania. In general, the GDP and bank credit to the private sector had a negative cointegration.

3. Research methodology

Finding the short and long-term causes of the correlation between credit activity and economic growth in Albania is the primary goal of this paper. After reviewing the econometric models used, I chose to build a multivariate regression model, the Vector Error Correction Model (VECM) investigate the causal relationship between variables across the long and short terms.

The quarterly time series examined in this study include 93 data for each variable and cover a 24-year period from the fourth quarter of 1998 to the fourth quarter of 2021. The data for each variable were collected from the Bank of Albania's website and from INSTAT. The model and all related tests are performed using the R statistical program.

The rate of quarterly GDP growth is used to evaluate economic growth. The independent variable of bank credit to the public sector expressed as a percentage of GDP will be the focus of the econometric model, calculated as the total of these loans in ALL millions to GDP. The additional independent factors taken into account are: bank credit to the private sector as percent of GDP; deposits as percent of GDP; ROE; non-performing loans and the Herfindahl index.

The definition of the variables is shown in Table no. 1 below.

Table no. 1. Defining variables

Variable	Code	Definition	Source
Economic growth	gdpg	the quarterly rate of GDP growth	INSTAT
Bank credit to the private sector (% of GDP)	credit_private	bank credit to the private sector (individuals and businesses) in ALL millions relative to GDP	Bank of Albania
Bank credit to the public sector (% of GDP)	credit_public	bank credit to government and public enterprises, calculated as the total of these loans in ALL millions of GDP	Bank of Albania
Nonperforming loans (% of total loans)	npl	non-performing loans are calculated as a percentage of all bank loans	Bank of Albania
ROE	roe	rentabilitatea capitalurilor proprii	Bank of Albania
Deposits (% of GDP)	saving	return on equity	Bank of Albania
Herfindahl index	hh	the degree of concentration of the banking sector	Bank of Albania

Source: own processing

The main hypothesis of the research methodology are:
 H_0 = Credit activity does not determine economic growth.
 H_a = Credit activity determines economic growth.

4. Findings

Table no. 2 shows the optimal gap for this model, as indicated by the Akaike information ratio (AIC), the Schwartz information ratio (SC), the Hannan-Quinn information ratio (HQ) and the final error prediction criterion (FPE). The HQ, FPE and SC lag selection criteria opt for lag 1 as a good delay sequence, and the AIC criterion chose lag 3. To see the impact of credit to GDP and for a larger gap, for this model I will choose to include all variables in the model with lag = 2.

Table no. 2. Delayed order selection criteria

Lag	AIC(n)	HQ(n)	SC(n)	FPE(n)
1	7.716521	8.181176*	8.867773*	2249.108795
2	7.814109	8.677040	9.952148	2503.718262
3	7.291422*	8.552628	10.416247	1521.703112*
4	7.626995	9.286476	11.738607	2232.803090

* shows the criteria-based lag order

Source: own data processing using the R program

According to the Maximum Eigen test of the Johansen cointegration in Table no. 3, the existence of a cointegration equation is confirmed, so the cointegration rank is 1 with a confidence level of 90%. Economic growth has an effective and cointegrated equation of rank 1. This finding suggests that, for the time period under study, economic development and credit activity in Albania have a long-term equilibrium connection.

Table no. 3. Johansen Max-Eigen test

No. hypothesized of cointegrations	Max-Eigen statistic	10% critical value	5% critical value	1% critical value
$r = 0$	43.96*	43.25	46.45	51.91
$r \leq 1$	35.61	37.45	40.3	46.82
$r \leq 2$	27.19	31.66	34.4	39.79
$r \leq 3$	13.65	25.56	28.14	33.24
$r \leq 4$	10.58	19.77	22	26.81
$r \leq 5$	6.29	13.75	15.67	20.2
$r \leq 6$	2.75	7.52	9.24	12.97

Source: own data processing using the R program

Considering the cointegration of the variables, the mathematical representation of the Vector Error Correction Model (VECM), specified in R software is:

$$EQ_{gdp} = 2.31credit_public - 0.21credit_private + 0.42saving - 0.03roe + 0.01npl - 0.17hh$$

The long-term impact of credit proxies on economic growth is displayed in Table No. 4.

Table no. 4. Long-term results from R's VEC regression equations

Variable	gdp
credit public	2.310971
credit private	-0.2080444
saving	0.4229355
roe	-0.03153645
npl	0.01387332
hh	-0.1733327

Source: own data processing using the R program

According to the VEC model, public credit, deposits, and non-performing loans all have a positive impact on economic growth. Otherwise, the findings revealed a negative correlation between economic expansion and ROE, the Herfindahl index, and private credit. The GDP will rise by 2.31 percentage points for every one percentage point increase in credit extended to the public sector. A 1% increase in the amount of credit extended to the private sector will result in a 0.21 % decline in GDP. A 1% increase in deposits will result in a 0.42 % increase in GDP. A 1% rise in the ROE level will result in a 0.3% decline in GDP. A 1% increase in the percentage of non-performing loans will result in a 0.1% increase in GDP. A 1% increase in the Herfindahl index will result in a 0.17 % decline in GDP.

The output of a VECM model over the short term is shown in Table No. 5. The system contained seven variables in the equation and GDP is defined as the function of its own delays and the other six variables.

ECT, or correcting errors and the long-term impact of variables, affects one's GDP. Benchmark ECT for GDP is -0.6% and is significant. This means a corrective tilt in the system shifts back by 0.66% from imbalances in one quarter to the next.

The impact of private credit on GDP is stronger in the short term, and lagged credit has a positive impact on GDP growth (lag 2). This result is in line with the study of Haiss and Kichler (2009). In lag 2, credit growth to the private sector will increase GDP by 0.69p.p. but two quarters later.

On GDP, the constant has a favorable effect. GDP growth will be 10.97p.p. if all variables have no impact. Following a credit-related economic shock, GDP is negatively adjusted. Eventually, bank credit to the private sector showed a lag in its negative effects on GDP (-0.91p.p.). Additionally, there is a sizable lag ratio (-1) between the expansion of the GDP and private sector

credit. This connection is significant and harmful. When this credit increases, the GDP will be negatively impacted, and the impact will show up three months following a gap (-1).

Table no. 5. Short-term output of VEC regression equations in R

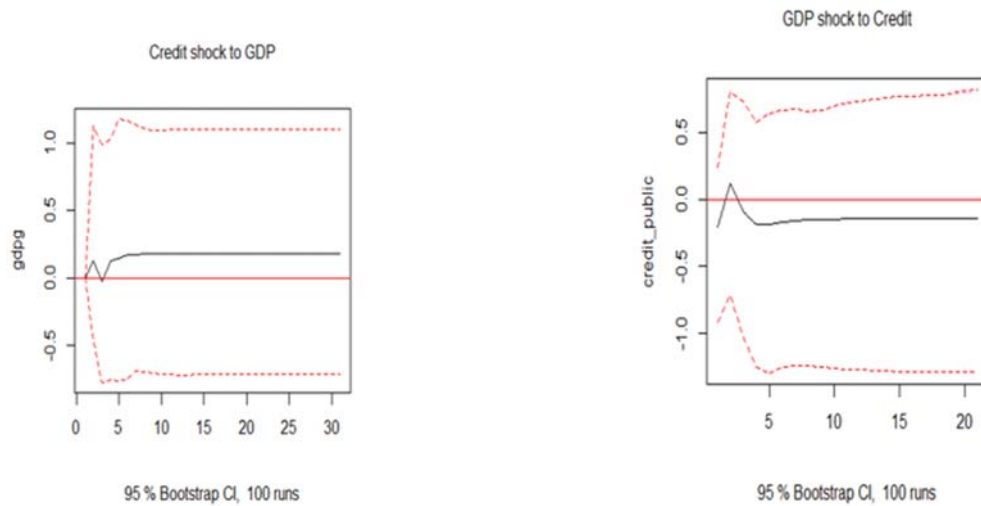
Regression coefficients	Equation 1 Equation gdp
ECT	-0.6579*** (0.1374)
Intercept	10.9701*** (2.3271)
gdp _g -1	0.2241. (0.1254)
credit _{public} -1	-1.2772 (1.289)
credit _{private} -1	-0.9105. (0.4725)
saving -1	-0.0325 (0.2383)
roe -1	0.2566 (0.1290)
npl -1	-0.1836 (0.2263)
hh -1	-0.70. (0.3734)
gdp _g -2	0.1702 (0.1109)
credit _{public} -2	1.153 (1.2391)
credit _{private} -2	0.6958 (0.4986)
saving -2	-0.1002 (0.2403)
roe -2	0.216 (0.1258)
npl -2	0.2653 (0.2278)
hh -2	0.2573 (0.3854)

Source: own data processing using the R program

There is also a negative lag ratio (-1) between bank credit to the public sector and GDP growth. Increased credit will have a negative influence on economic growth, and the effect will show up three months following a gap (-1). According to this model, this credit has boosted economic growth over time, and in the short run in lag 1 a negative relationship is observed. When the state is credited, initially the expenses increase and at the same time the budget deficit. In the long run, the funds that the state has invested in the economy will bring the first positive results. The Herfindahl index and GDP growth have a notable and negative lag ratio (-1). When the index rises, there will be a negative impact on economic growth, and the impact will show up three months following a gap (-1).

Figure no. 1 presents the impulse-response functions for economic growth and bank credit to the public sector. For the GDP growth equation and the equation of bank credit to the public sector, the impulse-response functions were derived.

Figure no. 1. Impulse-response functions for economic growth and public credit



Source: own data processing using the R program

For the model it was not found serial correlation nor heteroskedasticity, and errors are within the bounds of the normal distribution, as shown in Table No. 6.

Table no. 6. Portmanteau, ARCH and Jarque-Bera Tests

	Portmanteau Test	ARCH	JB-Test	Skewness	Kurtosis
Chi-squared	118.89	875.68	11148	641.13	10507
p-value	1.995e-06	0.01231	< 2.2e-16	< 2.2e-16	< 2.2e-16

Source: own data processing using the R program

5. Conclusions

The econometric model's findings demonstrated that the variables of bank credit to the public sector, deposits, and non-performing loans have a statistically significant direct link with the dependent variable, economic growth. On the other hand, the econometric model's findings indicated that there is an indirect relationship between economic growth and ROE, the Herfindahl index, and bank credit to the private sector.

The results showed that bank credit to the public sector has a positive effect on long-term economic growth, as these loans are used by governments for investments, a value that will be felt over time. This model also shows a long-term negative impact of bank credit to the private sector on economic growth. Albania as a country in transition has allocated a well-functioning financial system to the banking sector. For this reason, the rapid loan expansion during the early years of the transition and the subsequent slowdown following the financial crisis, the earthquake, and the coronavirus pandemic affected bank policy and helped to explain this negative relationship.

In the long run, bank credit to the public sector has had a positive impact on economic growth, and in the short run in lag 1 a negative relationship is observed. When the state is credited, initially the expenses increase and at the same time the budget deficit. In the long run, the funds that the state has invested in the economy will bring the first positive results.

6. References

- Bank of Albania Retrived from: <https://www.bankofalbania.org/>;
- Dima B., Opriş P., 2014. Financial Intermediation and Economic Growth. *Timisoara Journal of Economics and Business*, 6(20), pp. 127-136;
- Emecheta, D. B., 2014. Impact of bank credit on economic growth in nigeria: application of reduced vector autoregressive (var) technique. *European Journal of Accounting Auditing and Finance Research*, 2 (9), 11-21;
- Fink, G., Haiss, P., & Vuksic, G., 2005. *Importance of financial sectors for growth in accession Countries*. Conference on European Economic Integration 2005 (CEEI), Vienna;
- Gabeshi, K., 2022. The Determinants of Credit Activity and the Impact of their Evolution on Economic Growth. Case Study: Albania. *Revista de Ştiinţe Politice. Revue des Sciences Politiques*, no. 73/2022, 135-143;
- Gabeshi, K., 2022. The Impact of Credit Activity on the Economic Evolution of the Developed Economies. *Annals of the „Constantin Brancusi” University of Targu Jiu, Economy Series*, issue 1/2022, 185-190;
- Institute of Statistics Retrived from: <http://www.instat.gov.al/en/Home.aspx>;
- Iwanicz-Drozdowska, M., Bongini, P., Smaga, P., & Witkowski, B., 2019. The role of banks in CESEE countries: exploring non-standard determinants of economic growth. *Post-Communist Economies*, 31(3), 349-382;
- Kichler, E., Haiss, P., 2009. *Leasing and Economic Growth – Evidence for Central and South Eastern Europe*. Paper submitted for presentation at the 36th Annual European Finance Association (EFA) Meeting, August 19-22, 2009, Bergen, Norway;
- Leitao, N.C., 2012. Bank, credit, and economic growth. A dynamic panel analysis. *The Economic Research Guardian* 2.2: p. 256-267;
- Spulbăr C., Niţoi M., 2010. The lending activity and economic growth in Romania in the global crisis context. *Finance – Challenges of the Future*, no.12, pp.76-82;
- Spulbăr C., Niţoi M., 2011. *Sisteme Bancare Comparate*. Craiova: Sitech Publishing House;
- Zeqiraj, V., Hammoudeh, S., Iskenderoglu, O., & Kumar Tiwari, A., 2020. Banking sector performance and economic growth: evidence from Southeast European countries. *Post-Communist Economies*, 32(2), 267–284.