

DOES CREDIT MARKET ACCELERATE ECONOMIC GROWTH IN ROMANIA? STATISTICAL APPROACHES

Assoc. Prof. Mirela CRISTEA, PhD
 Assoc. Prof. Raluca DRĂCEA, PhD
 University of Craiova

1. Introduction

Banking sector influences to a great extent the economic activity, being a strong correlation between functioning of financial-banking sector and long-term economic development, its stability being extremely important for any economy.

The relationship between economic growth and credit market development has been an extensive subject of empirical research, being demonstrated that there is a correlation between them. The question is that what is the direction of the causality relation between economic growth and credit market development?

In the present economic circumstances by economical-financial crises on the world-wide level, for Romanian economy, the banking sector has a great importance, being a key factor for supporting the economic growth.

2. Theoretical Considerations

Numerous theoretical and practical studies demonstrate that a strong financial sector support economic development, most of them usually conclude that the development of the credit market accelerates economic growth. For instance, Schumpeter (1934) emphasized the role of banking sector as financier of productive investments and, in this way, an accelerator of economic development. Another early evidence which demonstrated that development of financing accelerates economic growth was in the paper of Goldsmith (1969).

Pagano (1993) infers three methods of influences of financial sector development will be able to influence economic development: (1) it rises the investment productivity; (2) it reduces transaction costs, and in this way it can rise the savings; (3) it can either to promote, or to reduce the savings.

Jappelli and Pagano (1994) develop a model in which the younger generation borrows extensively when no liquidity constraints accompany the liberalisation of consumer credit and mortgage markets.

A study applied for analysis of relationship between credit market development and economic growth in Italy for the period 1965-2007 indicates that „bank development is determined by the size of bank lending directed to private sector at times of low inflation rates leading to higher economic growth rates. Businesses make new investments to innovative products through bank lending in more developed countries, (Vazakidis and Adamopoulos, 2009).

Levine realised a lot of studies cross-country data regarding the correlation between financial sector and economic growth. Thus, together with King (1993), they measured financial sector development for 80 countries using four variables: the amount of liquid liabilities divided by GDP, the importance of commercial banks in relation to central bank when allocating credit, the ratio of credit allocated to private enterprises to total domestic credit, and credit to private sector divided by GDP.

Levine (2002), analysing the correlation between financial structure

and economic growth (Real per Capita GDP Growth) for 48 countries over the 1980-1995 period, underlines the critical importance of the banking system over the economic growth and reveals the circumstances when banks can actively stimulate the future growth by identifying and funding productive investments.

On the other hand, the conclusions of other research in transition countries stress out that "due to specific characteristics, the growth in credit has not always been sustainable and in some cases it may have led to a decline in growth rates" (Koivu, 2002). Thus, analysing the relationship between the amount of credit to the private sector and economic growth in 25 transition countries (including Romania) during 1993-2000 period, Koivu (2002) demonstrated that their causality seems to run mostly from economic growth to credit growth. This outcome is justified by the characteristics of transition economies and the line of the financial market development in transition countries. The author noted following: (1) banking crises rocked the financial sectors of many countries during the first decade of transition, thus, large amount of credit could have led to significant drops in GDP growth; (2) the soft budget constraints still prevalent in many transition countries have encouraged private sector actors to make counterproductive investments, thus the banking sector does not promotes high economic growth; (3) the size of the financial sector is not a good variable to measure the development of effectiveness in the sector in transition countries.

We can say that, on the background of the analysis of Koivu from 2002, including the data of banking system from Romania in correlation with economic growth, our conclusion for the period 2001-2009 is the same after around ten years: the growth of private credit does not encourage the economic

growth, leading to a relative decline in economic growth rates.

3. Data Sources and Methodology

For our research, we used quarterly data offered by National Institute of Statistics and National Bank of Romania for the period 2001-2009. As research method, it was applied the backward method of linear regression (which consists of frequentative elimination of independent variables which have the most insignificant influence to dependent variable) into SPSS program (method tested on Table 2).

The variables are:

- economic growth rate (real quarterly growth rate of GDP) for what was verified the correlation as dependent variable;
- the total credit, the average exchange rate RON/EURO and inflation rate, as independent variables.

As it is presented into the Statistical Year Book of Romania, after a decline period between 1997-2001 of GDP, **economic growth** was raised the bid starting with 2002. The growth was determined, significantly, by rising of activity from service, construction and industry fields.

The economic growth registered after 2001 was affected by substantial increasing of deficit current account, because of pronounced rising of goods and services imports level, comparatively with the exports one.

The economic growth after the year 2004, considered as the highest for Romania after 1989, was realised principally due to a good agricultural year and to constructions.

The year 2007 marks a break into the economic cycle: the inflation has come back, its trend being descending (Figure 2), the average exchange rate RON/EURO followed an ascending trend, on the base of increasing of external deficit. The economic growth was

obtained principally from raising the imports much over the exports level.

After year 2009, together with significant contraction of economic growth and rising of unemployment, the national currency (“leul”) has entered

under the pressure, the credit debts risen unexpected, and the credit level reduced considerably, on the background of risk aversion and of limited financing banks resources.

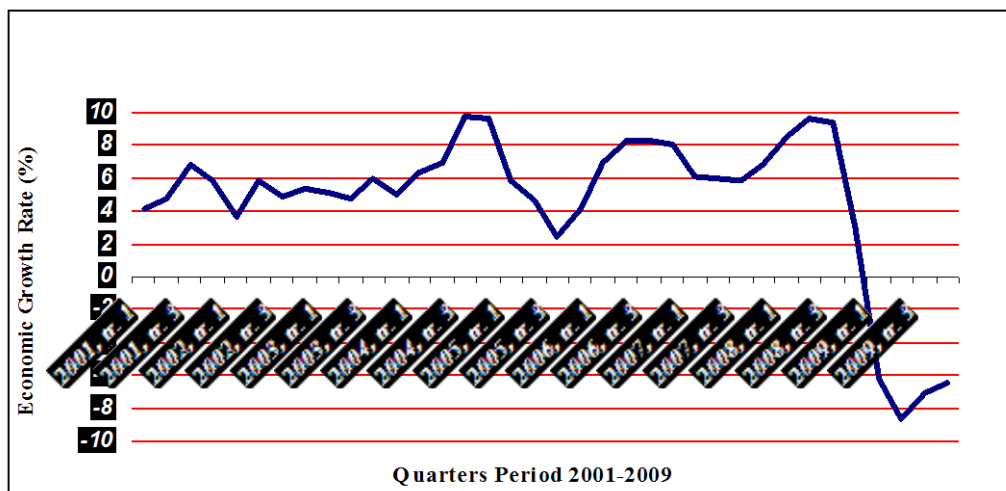


Figure 1. Economic Growth Rate in Romania, Quarterly Evolution 2001-2009

As we can notice in the Figure 2, on the period 2001-2007, the inflation rate in Romania registered a decreasing tendency from 40.07% at the end of trim. I of 2001, to 3.79% at the end of trim. II of

2007, followed then by an increasing from 4.99% starting with trim. III of 2007, to 8.56% at the end of 2008, and then again a decreasing to 4.56% at the end of trim. IV of 2009.

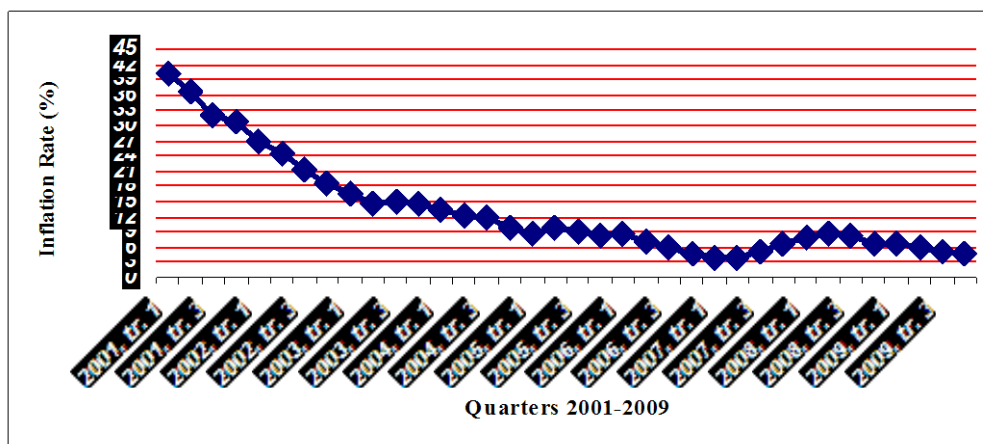


Figure 2. Inflation Rate in Romania, Quarterly Evolution 2001-2009

The adverse effect of slowing down of economic activity, the rising of

inflation and depreciation of national currency lead to diminution of credit

demand and to come-down of quality debts portfolio owned by credit institutions to non-banking clients.

Still by launching of economic-financial crisis at international level till now, in Romania, the number of debts registered to payment of credits was to a constantly increase. Banks intended to limit credit approach, on the one hand because of impact area of crisis (neither mother-banks or branches from other states were not kept off by its effect) and on the other hand, to insure that the future clients will afford the payment of instalments. The credit costs have started to decrease, influenced by the monetary policy interest of NBR of which rate was reduced starting with May of 2009, but the eligibility conditions of credit institutions became more harder to accomplish by the clients.

Using this data, applying the linear regression within SPSS involves, on the one hand, a statistical analysis of the correlation between the dependent and independent variables and, on the other

hand, the aim is to obtain the coefficients needed for the regression's equation.

As for the correlation analysis regarding the economic growth rate as a dependent variable and the independent variables: trimestrial data for the total credit value, rate exchange RON/EURO and inflation rate, the results are presented in the *table 1*. The table is structured into three parts for the correlation analysis being interesting the data obtained for the Pearson's coefficients and the significance.

4. Results and Discussions

The Pearson's correlation coefficients are between -1 and 1, the positive values indicates a direct correlation, while a negative value indicates an inverse correlation.

The correlation coefficient (Pearson) indicates a stronger correlation as its value is approaching the 1 value. Furthermore, the significance has to be lower than 0.05 to express a good accuracy.

TABLE 1 The correlation coefficients and the significance for the dependent and independent variables

Correlations

		Economic growth	Average rate exchange RON/EURO	Inflation rate	Total credit value bil RON
Pearson Correlation	Economic_growth	1.000	-.360	.130	-.535
	Average_rate_exchange RON EURO	-.360	1.000	-.742	.507
	Inflation_rate	.130	-.742	1.000	-.613
	Total_credit_value_bil RON	-.535	.507	-.613	1.000
Sig. (1-tailed)	Economic_growth	.	.016	.226	.000
	Average_rate_exchange RON EURO	.016	.	.000	.001
	Inflation_rate	.226	.000	.	.000
	Total_credit_value_bil RON	.000	.001	.000	.
N	Economic_growth	36	36	36	36
	Average_rate_exchange RON EURO	36	36	36	36
	Inflation_rate	36	36	36	36
	Total_credit_value_bil RON	36	36	36	36

Analysing the results from the table 1, for all the 36 observations, the correlation coefficients have negative values, thus there are opposite correlations between the dependent and independent variables. The aim of using the linear regression is to determine what

impact on the economic growth has the independent variables such as: a) Total credit bil RON; b) Average rate exchange RON/EUR; c) Inflation Rate.

The optimal method used for the linear regression model is the backward method.

TABLE 2 The backward method

Model	Variables Entered	Variables Removed	Method
1	Total_credit_value_bil RON, Average_rate_exchange RON_EURO, Inflation_rate		Enter

None of the independent variable were removed, as it is shown in table 2.

TABLE 3 The correlation coefficient

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681 ^a	.464	.414	3.554218

a. Predictors: (Constant), Total_credit_value_bil RON, Average_rate_exchange RON_EURO, Inflation_rate

b. Dependent Variable: Economic_growth

From the table 3, there can be observed that among the variables, it is a good correlation, but not very strong, because the correlation coefficient is 0.681. In addition to this value, none of

the independent variables have been removed, so all these variables have a semnificative influence on economic growth.

TABLE 4 The linear regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	29.850	7.649		3.903	.000		
Average_rate_exchange RON_EURO	-4.925	1.881	-.508	-2.619	.013	.445	2.250
Inflation_rate	-.322	.102	-.669	-3.160	.003	.373	2.679
Total_credit_value_bil RON	-3.969E-5	.000	-.688	-4.177	.000	.618	1.617

Dependent Variable: Economic_growth

The significance is below 0.05, which means that there are small errors determined by chance.

As a remark, the total credit influence on the economic growth is very good and strong (sig.=.000), and the tolerance is 0.618, greater than 1-Adjusted R square (1-0.414=0.586), which eliminates the uncollinearity risk. VIF (Variance Inflation Factor = 1/Tolerance) also helps for the collinearity analysis, being able to warn about an uncollinearity situation if its value has a greater value than 6.

In our case, VIF is 1.617, which also eliminates the uncollinearity risk.

Thus, using the coefficients calculated (column B – table 4), **the linear regression equation obtained is:**

$$\text{Ec. Growth Rate} = -4.925 \text{ Av. Rate Exch.} - 0.322 \times \\ \times \text{Inf I. Rate} - 3.96 \times 10^{-5} \times \text{Total Credit Value} + 29.85$$

5. Conclusions

The interpretation of coefficients from regression equation points out that, considering data for the period 2001-2009, on a short period of time, it is expressed the following correlations:

- if average exchange rate increases with one point, then economic growth rate decreases with 4.9 percent;

- if inflation rate increases with one percent, then economic growth rate decreases with 0.322 percent;

- if total credit value increases with 1 million RON, then economic growth rate decreases with 3.96×10^{-5} percent.

Therefore, the answer to the question "what is the direction of the causality relation between economic growth and credit market development?" in Romania is that the growth of private credit, inflation rate and average rate exchange rate do not encourage the economic growth, leading to a relative decline in the economic growth rates.

This conclusion is the same with that obtained by Koivu in 2002 when he analysed the relationship between credit market and economic growth in 25 countries in transition, including Romania, and he invalidated previous theories which sustained the direct causality relation between credit market and economic growth.

Consequently, on the short time, credit activity, inflation rate and the evolution of average exchange rate in Romania have to be under control in order do not influence in the negative way economic growth in our country.

ACKNOWLEDGMENTS

This work was supported by CNCSIS – UEFISCSU, project no. 299/01.10.2007, PNII – IDEI, ID_91/2007

REFERENCES

Fink, G.,	Financial Institutions, Development and Economic Growth in New EU Member States, Europa Institut, WU-Wien, http://www.eurogiro.com 2006;
Goldsmith, R.,	Financial structure and development. New Haven. Yale University Press, 1969;
Hyytinen, A., and Takalo, T.,	Enhancing Bank Transparency: A Re-assessment, <i>European Finance Review</i> 2002 6(3):429-445; doi:10.1023/A:1022037025942, 2002;
Hyytinen, A., Takalo, T.,	Preventing Systemic Crises through Bank Transparency, <i>Economic Notes</i> , Banca Monte dei Paschi di Siena SpA, vol. 33(2), pg. 257-273, 07, 2002;
King, R. G. & Levine, R.,	Finance, entrepreneurship and growth. <i>Journal of Monetary Economics</i> 32, 513-542, 1993;

Koivu, T.,	Do efficient banking sectors accelerate economic growth in transition countries?, Bank of Finland Institute for Economies in Transition, BOFIT, Discussion Paper, no 14/2002, pp.7;
Levine, R.,	Bank-Based or Market-Based Financial Systems: Which is Better?, <i>William Davidson Working Paper</i> Number 442, February 2002;
Pagano, U.,	Markets and Democracy, <i>Organizational Equilibria and Institutional Stability</i> , Cambridge University Press, Cambridge, 1993;
Schumpeter, J.,	The Theory of Economic Development, Cambridge, Mass: Harvard University Press, 1934;
Vazakidis, A., and Adamopoulos, A.,	Credit Market Development and Economic Growth, <i>American Journal of Economics and Business Administration</i> 1 (1) 34-40, 2009;
National Bank of Romania,	Monthly Bulletins 2001-2009, http://www.bnro.ro/Publicatii-periodice-204.aspx ;
National Institute of Statistics, Romania,	http://www.insse.ro/cms/rw/pages/PIB-trim.ro.do;jsessionid=0a02458c30d5b00ae1e5c589497ca6c087f6b2833baf.e38QbxoSahyTbi0LaxyMe0 .