

# The relation between financial development and economic growth in Romania

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## Abstract

This paper investigates the empirical relationship between financial sector development and economic growth for Romanian economy. First, we calculate the correlation coefficient between various indicators of financial sector development (ratio of domestic credit to GDP, ratio of private investment to GDP, ratio of quasi-money to GDP, etc.) and real GDP which represents economic growth. Second, we construct a model of economical growth using the Cobb-Douglas production function, in which the endogenous variable is GDP and the exogenous variables are indicators of financial sector development, in order to analyze the impact of financial sector development on economic growth. After designing this model, we validate it using data from Romanian market between 1995 and 2005 and we show that financial sector development has indeed a significant contribution to economic growth in Romania.

## I. Introduction

The relationship between financial development and economic growth is one important area of discussion in recent theoretical and empirical literature. The analysis of this relationship started with the works of Goldsmith (1966), Gurley & Shaw (1955), McKinnon (1973) and Shaw (1973) and has continued with some theoretical and empirical studies which have tried to deepen our understanding of the different aspects of this relationship by exploring the direction of causality between the financial development and economic growth (King & Levine, 1993; Levine, 1986; Thakor, 1996). Financial development includes both financial widening and financial deepening. Financial widening refers to the expansion of financial services and the growth of financial institutions and financial deepening refers to an increase in per capita amount of financial services and institutions or an increase in the ratio of financial assets to income (Ahmed & Ansari, 1998).

Financial sector development in developing countries and emerging markets is a part of the private sector development strategy to stimulate economic growth and reduce poverty. A solid and developed financial sector is a powerful engine behind economic growth. It generates local savings, which in turn leads to productive investments and a superior

allocation of resources. The financial sector development tends to increase investors' borrowing options allowing investors to choose an optimal debt structure for a given project.

In the last two decades, many countries, especially the developing ones, have implemented a variety of financial liberalization measures that have led to the increasing intermediation role of the stock markets and significant changes in their financial structures. Recent works in endogenous growth literature have showed that the financial intermediaries can contribute to economic growth through various aspects of productive activity.

The purpose of this paper is to evaluate the role of financial development in economic growth in Romania. Romania is a medium size EU country with a less mature financial market. Since the role of financial development in economic growth has not been sufficiently investigated for this economy, this study is intended to make a significant contribution upon this aspect.

## II. Financial development and economic growth: literature review

There is a large body of theoretical and empirical literature regarding the role of financial development in economic growth. This literature indicates that researchers in economic domain hold different views regarding the existence and direction of causality between financial development and economic growth.

In what follows, we will present some of the views regarding the causal relationship between financial development and economic growth, discussing the theoretical and empirical key issues associated with each of these views.

Some authors hold the view that financial development has a positive effect on economic growth (Goldsmith, 1969; McKinnon, 1973 and Shaw, 1973). This is what Patrick (1966) referees to as the “*supply-leading*” role of financial development. According to this view with a considerable support from recent empirical studies (Greenwood & Jovanovic, 1990; Thakor, 1996), by increasing the size of savings and improving the efficiency of investment, financial development leads to a higher economic growth. Levine (1997) divided the functions of a financial system into five basic tasks: 1) to facilitate the trading, hedging, diversifying, and pooling of risk, 2) to allocate resources, 3) to monitor managers and exert corporate control, 4) to mobilize savings, and 5) to facilitate the exchange of goods and services (Levine, 1997). Goldsmith (1969) demonstrated that financial development directly increases savings in the form of financial assets, encouraging capital formation and economic growth. McKinnon (1973) and Shaw (1973) believed that the effect of financial development on the economic growth depends on the effects of financial development on the interest rate.

Another view of the relationship between the two variables advanced by Robinson (1952) was the “*demand following*” view and it states that financial development follows economic growth or “where enterprise leads finance follows” (Robinson, 1952, p.86). According to this view the real side of the economy expands, its demand for financial services increases leading to the growth of these services. Additional support for this view can be found in the work of Friedman and Schwartz (1963) on the demand for money. This simply requires noting that the ratio of the broad money stock to nominal GDP (a standard measure of financial development found in the literature) is also the inverse of the velocity of circulation of the broad money stock. Empirical support for this second view can also be found in some recent studies (Demetrides & Hussein, 1996; Ireland, 1994).

A third view of the relationship between financial development and economic growth is the causality issue. Gupta's (1984) work represented the first attempt to study the causality issue, using data on industrial output in order to measure the level of economic development.

There are, however, several limitations in Gupta's analysis. The main limitation is represented by the fact that financial development is measured by the level of the broad money stock, M2. Another study of causality between financial development and economic growth was the Jung's (1996) study, which used annual data and more standard measures of output and financial development in a VAR (Vector Autoregression) framework.

A recent study of causality has been accomplished by King and Levine (1993a) in a cross section context. Their main finding was that the initial values of the various financial development indicators predict the average values of their growth indicators (growth rates, ratio of investment to GDP, efficiency of investment) over the subsequent 10 to 30 years. The authors found evidence of a strong, positive relationship between each of the four financial development indicators and the three economic growth indicators; a significant correlation between financial depth and each of the growth indicators; initial level of financial development being a good predictor of subsequent rates of economic growth. Finally, they concluded that financial development not merely follow economic activity, but plays an active role in economic growth and capital accumulation.

The last view which was originally put forward by Lucas (1988), argues that financial development and economic growth are not causally related or in other words "economists badly overstress the role of financial factors in economic growth." (Lucas, 1988).

From this brief presentation of the different streams of thought on the relationship between financial development and economic growth, it is obvious that the results obtained in the literature are mixed and inconclusive and there is no general consensus among researchers regarding this relationship.

### **III. Financial development and economic growth in Romania: a correlation analysis**

In order to analyze the financial development, it common in the literature to employ some measures of the money stock over GDP (e. g., the ratio of broad money to nominal GDP, the ratio of quasi/money to nominal GDP). These components of monetary aggregates pose significant problems of the interpretation of the relationship between financial development and economic growth because they measure more the monetization rather than the financial development, make no differentiation of liabilities among financial institutions and cannot represent the actual volume of funds channelled to the productive sector (Demetriades & Hussein, 1996).

In this study, we use as the indicator of financial development the ratio of domestic credit of banking institutions to nominal GDP (DC/YN), because the size of financial intermediaries is positively related to the provision and the quality of financial services and domestic credit are crucial for achieving a high rate of economic growth (King & Levine, 1993). In order to measure the economic growth, we use the per capita real GDP (PY).

Because this study is applied in Romania, we think that it is important to clarify some aspects related to the Romanian economy.

Romania is one of the countries with transitional economy, which has made some progresses in the direction of formation of the functional system of market economy. After 1990, in Romania were operated important transformations on the economical and social level, but also on the delay related to market mechanisms' promotion and on the preparation of the premises for a lasting development of the Romanian society.

For this study, we choose to analyze the period between 1995 to 2006, because in this period, the economy was more stable. Table 1 presents the major financial and economic indicators for Romania and from a simple analysis of this table, we can see a significant growth in all major indicators since 1995 till 2006.

**Table 1: Major financial and economic indicators for Romania**

Indicators	1995	1996	1997	1998	1999	2000
Nominal						
GDP(billion lei)	72 135.5	108919.6	252925.7	371198.8	545730.2	803773.1
Domestic						
Credit(billion lei)	17399.01	31,450	47431.996	79919.36	101340	112886
Real						
GDP(million lei)	53326102	74983506	102326594	240740961	369499499	557457777
Per capita real						
GDP(million lei)	2.347886	3.309632	4.5313621	10.687204	16.430528	24.825016
Pop	22712394	22656145	22581862	22526093	22488595	22455485
DC/NY	0.241199	0.288745	0.1875333	0.2153007	0.1856962	0.1404451
	241.199	288.745	187.533	215.3	185.696	140.445
	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
	1167687	1514750.9	1975648.1	2463716.5	2871860	3424180
	143245	200221	301225	365187	401567	442679
	849950612	1227476438	1593886052	2142698603	2577971200	3073770000
	37.892702	56.2199095	73.2054653	98.6906975	119.027997	142.236914
	22430457	21833483	21772774	21711252	21658528	21610213
	0.1226741	0.13218081	0.15246895	0.14822606	0.13982819	0.12928029
	122.674	132.181	152.469	148.226	139.828	129.28

For the correlation analysis between financial development and economic growth, we calculate the correlation coefficients between ratio of domestic credit to nominal GDP (DC/YN) and per capita real GDP. The correlation coefficient is -0,70 what indicate a negative relative strong relationship between financial development and economic growth in Romania.

Analyzing the data between 1990-2006 we obtain a correlation coefficient of -0,2 which indicate that is no link between the financial development and economic growth which validates Lucas' view. A possible cause of the lack of correlation between the two variables is the fact that during the period of time Romanian economy wasn't very stable.

#### IV. Econometric analysis of the relationship between financial development and economic growth

Since a correlation analysis does not indicate the magnitude of the relationship between financial development and economic growth, we estimate, in this section, for an impact study, an equation which incorporates important explanatory variables.

Utilizing the basic determinants of economic growth model which has been extensively used in the empirical literature for analyzing this relationship, we start with the following Cobb-Douglas equation:

$$Y(t) = AK(t)^{\alpha}L(t)^{\beta}F(t)^{\gamma}$$

Where: Y= real GDP

K= I (Direct Investment).

Because we don't find data on growth of capital stock, we use direct investment as the proxy variable for K (Park, 1992).

L= population

$F$ = the measure of financial development (ratio of domestic credit to nominal GDP)

We take the natural log of both sides and we get:

$$\ln Y = \ln A + \alpha \ln K + \beta \ln L + \gamma \ln F$$

Noting  $Z = \ln Y$ ,  $X = \ln K$ ,  $T = \ln L$ ,  $S = \ln F$ ,  $a = \ln A$  and adding an error-term that satisfies the standard assumptions, we obtain the following equation:

$$Z_t = \alpha X_t + \beta T_t + \gamma S_t + a + \varepsilon_t$$

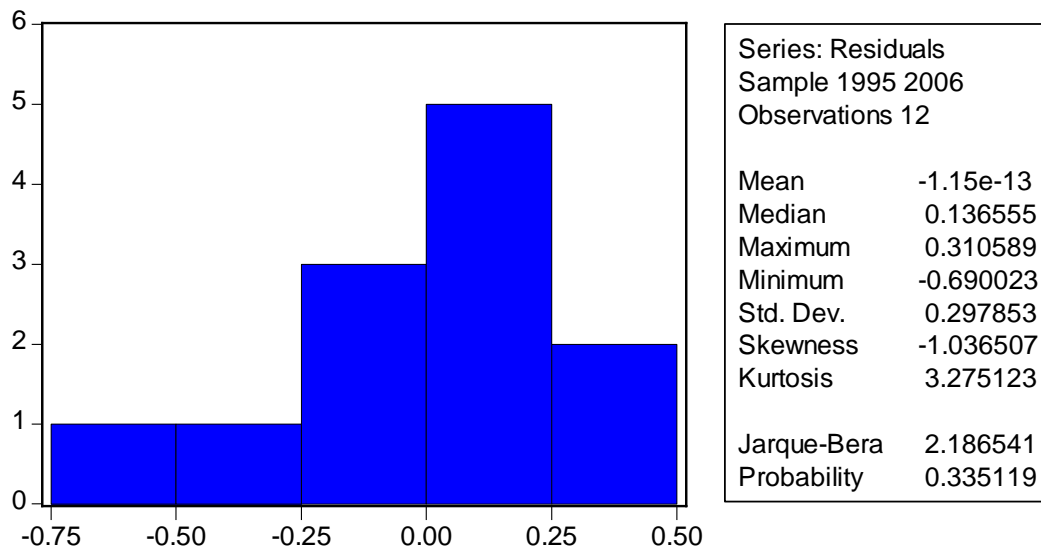
and following data:

	1995	1996	1997	1998	1999	2000
ln Y	17.79194	18.13278	18.44368	19.299232	19.7276599	20.1388973
ln I	13.65049	13.60568	15.987253	16.711755	16.570206	16.9393718
ln L	16.93842	16.93594	16.932658	16.930185	16.9285188	16.9270455
ln F	5.485622	5.665544	5.2339548	5.3720324	5.22411093	4.94481595

	2001	2002	2003	2004	2005	2006
	20.5606888	20.9282262	21.1894409	21.4853319	21.6702686	21.84617066
	17.3453195	17.3602545	18.0884435	19.1521258	17.6642959	17.52936063
	16.9259303	16.8989553	16.8961708	16.8933412	16.8909098	16.88867658
	4.80953043	4.8841722	5.0269613	4.99873814	4.9404131	4.861980595

We have used E. Views 5.1 in order to estimate the equation and we firstly calculate the correlation coefficients between the dependent variable (Y) and the independent variables (K, F, L) and we observe that all coefficients are significant at the one percent.

For testing the normality hypothesis of residuals, we use the Jarque-Bera test based on the sample kurtosis and skewness which states that for  $k$  (Kurtosis) = 3, we have a normal distribution. In our example  $k=3,27$  which is almost good.



To test if the coefficients for all the dependent variables are significant, we use the Student test. We know that  $t(0,05;12-2) = 2,228$  and we calculate  $t$  for all coefficients. We observe that two coefficients are negative and have a low statistical significance.

Dependent Variable: Y  
 Method: Least Squares  
 Date: 10/09/07 Time: 07:52  
 Sample: 1995 2006  
 Included observations: 12  
 $Y=C(1)+C(2)*L+C(3)*I+C(4)*F$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	650.4056	141.9213	4.582861	0.0018
C(2)	-37.00096	8.352449	-4.429954	0.0022
C(3)	0.215830	0.130339	1.655911	0.1363
C(4)	-1.566270	0.693914	-2.257153	0.0540
R-squared	0.956122	Mean dependent var		20.10119
Adjusted R-squared	0.939668	S.D. dependent var		1.421937
S.E. of regression	0.349264	Akaike info criterion		0.995222
Sum squared resid	0.975880	Schwarz criterion		1.156857
Log likelihood	-1.971330	Durbin-Watson stat		2.522847

These results indicate that there is no relationship between financial development and economic growth or that the inadequacy of sample size has seriously affected these results.

## V. Conclusions

This paper examines the relationship between financial development and economic growth in Romania. We used for the analysis of this relationship two approaches. First, we analyzed the correlation between financial development and economic growth and we noticed that there is no correlation when we use all data from 1990 to 2005 and there is an inverse correlation when we use data from 1995 to 2006. These results indicate that in Romania the reforms are not able to contribute to the process of financial development and, more general, to the process of economic growth.

Since correlation test for the period 1995-2006 indicates an inverse relationship between the indicators of financial development and the indicators of economic growth, we could estimate a Cobb-Douglas production function type equation with the data from Romania. The results obtained reinforce the findings of correlation analysis.

We conclude that in Romania there is no relationship between financial development and economic growth, one reason could be the fact that the weakness of the financial development has encouraged the inefficient allocation of savings and led in turn to a negative growth in the real GDP (inverse relationship) and another reason could be the lack of data which affects the viability and reliability of our results.

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