An empirical analysis on the impact of the development of the financial system upon the economic growth. The case of Romania and of the other states members of the European Union

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AN EMPIRICAL ANALYSIS ON THE IMPACT OF THE DEVELOPMENT OF THE FINANCIAL SYSTEM UPON THE ECONOMIC GROWTH. THE CASE OF ROMANIA AND OF THE OTHER STATES MEMBERS OF THE EUROPEAN UNION

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Abstract: This paper outlines the existing connection between the development of the financial system and the economic growth of an economy. Along the time, many authors have tried to bring empirical prove that this connection exists on the long term, and it is very strong especially for the developing countries being explained through the channel of investment and productivity. Beside giving the theoretical arguments for this connection, the authors make an empirical analysis using pool data regressions, taking into consideration the old member states and the new member states of the European Union, with a special focus on the Romanian case.

Key words: financial system development, economic growth, capital market

JEL: G10, G20

1. INTRODUCTION

Along the history it has been asserted that among the determinants of the economical growth can be also mentioned saving and the endowment with physical, technological and human capital. This thing involves the realization of certain investments in the infrastructure, development and innovation, as well as in the education system, that can raise the current level of these resources in every country and lead to a growth in the productivity, and in the competition of that country materialized through a higher GDP per capita. But there is an extremely important factor like financing resources, the degree of development of the financial system of the economy that leads to economical growth. On a microeconomic level, in what concerns the economical agents, financing is the most important for the development. All in all, no matter how good the product or how efficient the commercialization channels or the correlation level between technology and the human factor may be, if the business does not have an efficient financing politics, regarding the liquidity as well as the solvency and the profitableness, it will crash minimizing the other successfully realized aspects.

The paper aims at realizing a synthesis of the current stage of the research in what concerns the empirical analysis of the connection between the level of development of the financial system and the economic growth, wishing to prove empirically the nature of this connection at the level of the member states of the European Union. There are being observed both old members and new members of the European Union, that have recently adhered in May 2004 and January 2007, focusing in the same time on the case of Romania.

2. THEORETICAL BACKGROUND

The financial system unifies the demand and the offer of capital through banks, capital markets, and other financial intermediaries like mutual funds or pension funds. An efficient financial system mobilizes the collected saving by the entities that, after they satisfy their own objectives of investment and consumption, have a financing capacity, for channeling it towards those entities that, for realizing their investing objectives, need financing, offer an efficient payment and clearing system, in this way facilitating the financial transactions. An efficient system is the one that realizes the gathering and allocation of the resources in an optimum way, the one that has realized in a satisfying manner the remuneration, safety, and liquidity conditions of the deposits or the equivalent instruments of collecting

the resources, and on the other hand, the cost conditions and financing period for the allocated resources. Until short time ago, it was believed that the financial system develops after the entrepreneurial sector, channeling towards investments, at the request of the undertaker, the over pluses obtained as a consequence of the savings of the population. Following what Schumpeter first expressed in 1912, recent theories showed that an efficient financial system is a stimulus for the technological innovation, identifying and financing the undertakers capable to successfully innovate the product and the production process. One of those who have opted for this kind of thought is Levine (1991) who assures the fact that "a theoretical as well as an empirical constant work volume tends to make even the most skeptical to believe that the development of the financial system is a determinant of the economical growth, and not only a passive answer to this growth." Bencivenga and Smith (1991), as well as Levine (1991) are the first ones that propose endogenous growth models that identify the channels through which the financial system affects the long-term economic development of a country. In both papers, there is mentioned the the role of the financial markets in diversifying liquidities made available by the economic entities and of the investitional risk, in attracting the savings towards productive investments and in preventing the withdrawal of capital from long-term projects. Because of the existence of the financial markets, there can be kept a huge amount of capital in the productive investments, thus leading to economic growth.

Levine (1991) and the others that share his opinion believe that there are inherent relations between financial intermediation and productivity and given the fact that improving the level of productivity would produce long term benefits on the level of economic development, it can be said that also the financial intermediation generates economical growth. Moreover, Levine (1991) suggests that the development of the financial system has an important positive effect over the economical growth saying that "it can be eliminated a third of the already existent inequality between the countries with an important growth and those with a slow growth through the development of the financial intermediation for the latter ones until they reach a developing level comparable with the one of the countries with a quick development".

The positive association between the degree of development of the financial system and economical growth was largely analyzed also by Demirguc-Kunt (2006) and Levine and King (1993). They get to the conclusion that this correlation stays significant even when other factors of influence are taken into consideration. Moreover, they prove that regarding a country with a developing financial system, the degree of financial development is correlated not only with the current growth, but also with the future economical growth. Their model identifies the innovation as the engine for economic growth. The financial markets have the role of analyzing the potential innovative projects, financing only the ones that are promising and monitoring the investment until its end. In this way, it is assured the function of efficient allocation. This is the main reason why, an economy with an efficient financial system will experiment a higher rate of productivity (Demetriades and Hussein, 1996). These show that, on the case of some countires like Zair or Mexico, if the volume of loans as percent of GDP would have increased, respectively the value traded on the capital markets as percent of GDP would have increased in the considered period of time, the economic growth, measured as GDP per capita would have increased as well.

More recently, Claessens (2006), analysing this influence of the development of the financial system upon the economic growth, state that this connection is sustainable because of the following 3 reasons ((Figure 1):

- *the development of the financial system leads to the development of the private sector*; access to finance is indispensable for sustaining the private sector of a country, represented by the companies. The lack of alternatives in obtainance of the necessary capital makes it almost impossible to develop in optimal conditions the operational activities and the accomplishment of the development investments. A survey realized by World Bank (2000) upon the companies from 80 developing and developed companies reached the conclusion that after the fiscality, the financing represents the second biggest obstacle for starting-up or developing the activities of a company. Through a broader access to finance, the companies can grow with a rapidly path. Ayyagari, Demirgüc-Kunt and Maksimovic (2005) concluded in their paper that finance is the biggest constraint in reaching economic growth. More precisely, they mention that the development of the financial system leads to an increase in the productivity of the company, of the competition and of the innovation. These further translate into economic growth.
- *the development of the financial system leads to the development of public sector;* an efficient and well-developed financial system allows the state to dispose of sufficient financial

resources in order to finance the budgetary deficit or to finance the investment projects for creating the necessary infrastructure for sustaining the economic development of a country. A mature and liquid market will give the state the opportunity of finding cheap financial resources for supporting projects needed in the energetic, educational, health, transport, telecommunication areas.

- *the development of the financial system leads to a higher macroeconomical stability*; the financial systems are being continuously exposed to risks. The banking system is considered the most fragile mechanism of the economy, in the sense that it feels the most the effects of a shock within the economy. These shocks can be easily cuantified in financial crisis that appear most frequent in the less developed countries (the current financial crisis gives us though a counter argument). The costs of these crisis are enormous compared with the GDP of a country. This is the main reason why a sound financial system brings economic growth.

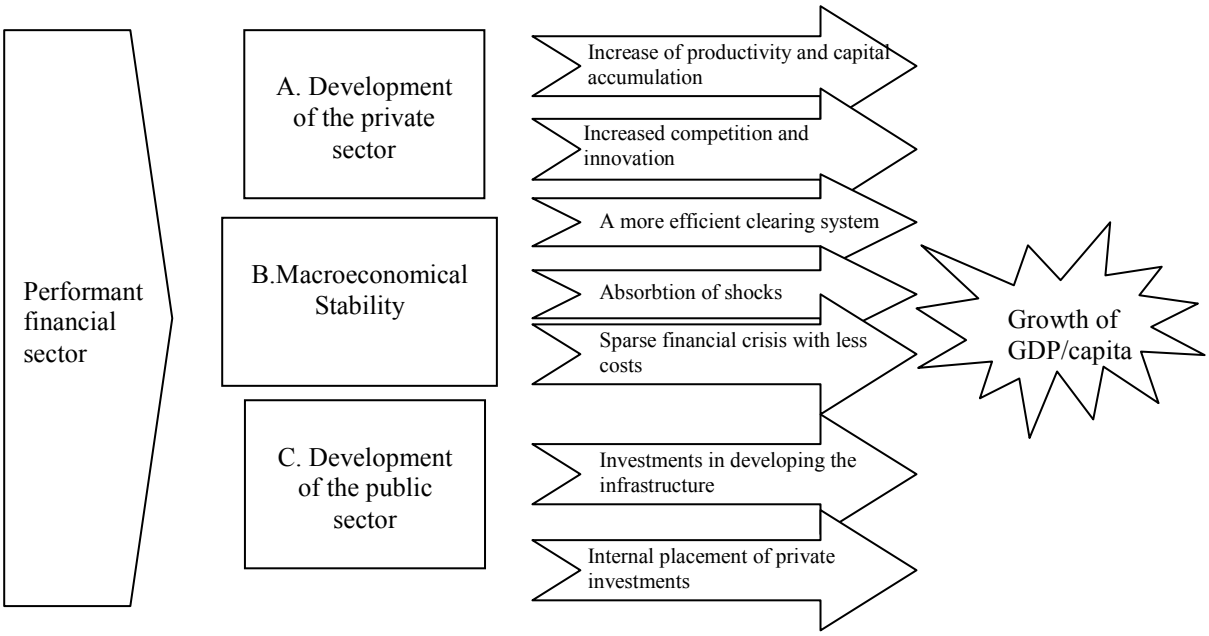

Figure 1 – Financial development and the trigger factors of the GDP/capita growth
Source: Claessens (2006)

In this context, we must conclude that the financial system as a whole, referring here both at the banking system, with its primary objective of giving loans, and alsi the capital market, with its extremely important role in the economy, generate economic growth. Once with the fulfillment of some pre-conditions concerning the population income, the investments made in education, the political stability, the fiscal politics, the liberalization of commerce, the macroeconomical stability and the expectances regarding the evolution of the capital market, the indicators of the banking system and of the capital market become important predictors of the saving rate, of the capital accumulation, productivity growth and of the real economic growth. **In the following section, we will make an empirical analysis upon the European Union member states, trying to support or reject the theoretical aspects mentioned so far.**

3. ECONOMETRICAL METHODOLOGY

As stated in the previous paragraphs, the sample to which our anlysis is focused on is available for 27 countries, member of the European Union, for the period 2002-2007. The data has been made available by Eurostat, the web pages of the national capital markets and the web pages of the national central banks of each country[1].

[1] The descriptive statistics for all data is available on Appendix 1

The analysis method is Eviews 5.0. This data structure permits the processing the data in a „pool data" system, that implies a mixture between time series and cross-sectional data. The used model, given the variables mentioned above and the general model of a pool data regression is the following one:

$$\ln(GDP_{it}/GDP_{it-1}) = \alpha + \beta_{1it} \ln(Kap_{it}/Kap_{it-1}) + \beta_{2it} \ln(Loans_{it}/Loans_{it-1}) + \gamma_i + \varepsilon_{it} \quad (1)$$

where:

GDP_{it} -dependent variable, the variation of the gross domestic produc (market prices)

β - independent variables coefficients

Kap_{it} – independent variable, the variation of the annually market capitalization

$Loans$ -independent variable, the variation of the volume of the bank loans

γ_i - fixed effects

ε_{it} - stochastic variable

i,t - the number of "section" used to run the regression, respectively time period

Previous to the computing of the econometrical models, we have realized a short comparative analysis of the level of development of the financial system into the EU-27 countries, meant to give us a direction in what concerns the current differences of the financial system architecture between old EU member countries (EU-15) and the new member countries (EU-12). As we can see in the figure below, for both EU-12 and EU-15 countries, the banking system is the predominant intermediary in the current financial systems of the economies. But while for the EU-15 countries the indicator of development (loans as percent of GDP) has an average of 182.47 %, for the EU-15 it shows just 111.49 %. The capital market indicator (market capitalization as % of GDP) shows for the EU-12 an average level of 41,20 % of GDP, while for the EU-15 countries it reaches 96.46 % of GDP (Figure 2).

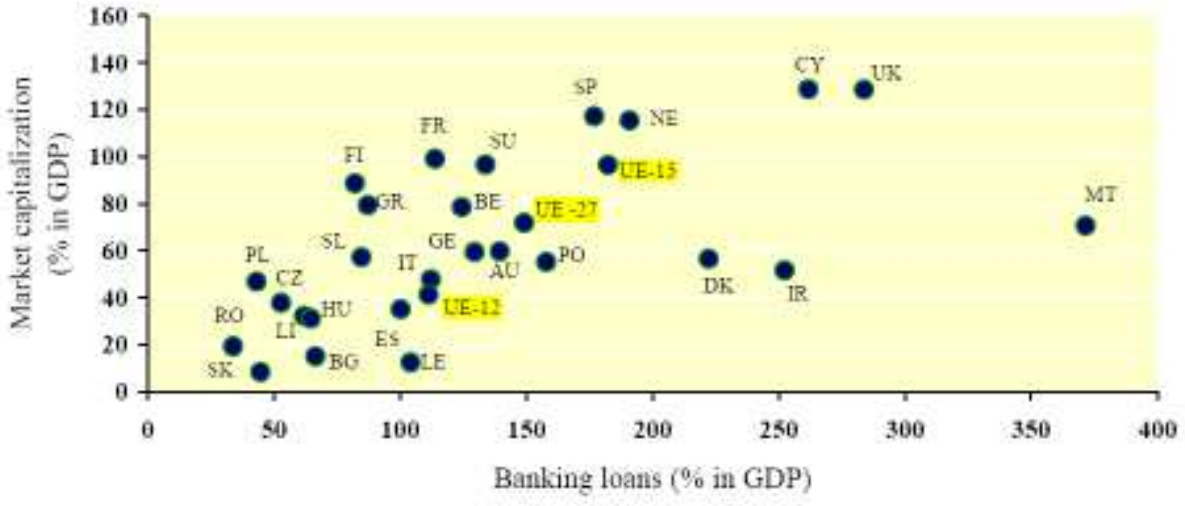

Figure 2 – The level of development of the financial system in the EU-27 countries (2007)
Source: dates computed by author on the basis of information from national stock exchanges, National Banks and Eurostat

Having as a general picture the current level of development of the financial system of the EU-27 countries, we will try to see in which countries the connection with the level of economic growth proves to be stronger, through the econometrical modelling.

4. RESULTS

The results obtained from the econometrical computation of the models show a positive connection between the level of financial development and the economic growth both in the case of some EU-12 and for most of the EU-15 countries. The connection appears to be very strong, especially in what concerns the influence of the banking system upon the economic growth. In the case of EU-12 countries, the coefficients reach the highest levels in Hungary (0,54), in Romania (0,45) and Poland (0,41). As far as concerns the EU-15 countries, the most intense connection between the level of development of the banking system and the economic growth appears to be in Germany (1,53), Sweden (0,91) and Portugal (0,59). The capital market seems to have a lower influence upon the economic growth, both in what concerns the EU-12 and the EU-15 countries. That seems to confirm the fact that nowadays, the financial architecture of the EU countries is based on the banking system. The impact of the development of the capital market upon the economic growth seems to play an important role in what concern the EU-15 countries, in Luxemburg for example (with a coefficient of 0,20), while in the EU-12 the connection is less stronger, with coefficients of 0,10 (Bulgaria) and 0, 07 (Czech Republic) (Table 1).

Table 1

Results of the pool data regressions, having in consideration the EU-27 countries

Dependent Variable: GDP				
Method: Pooled EGLS (Cross-section weights)				
Total pool (unbalanced) observations: 134				
White diagonal standard errors & covariance (d.f. corrected)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
_BE--KAP_BE	0.054438	0.074778	0.727989	0.4687
_DK--KAP_DK	-0.029844	0.018259	-1.634505	0.1061
_GE--KAP_GE	-0.020019	0.034182	-0.585659	0.5598
_IR--KAP_IR	-0.100710	0.098858	-1.018737	0.3114
_GR--KAP_GR	0.019456	0.017008	1.143934	0.2561
_SP--KAP_SP	-0.024924	0.080566	-0.309367	0.7578
_PT--KAP_PT	-0.054622	0.023956	-2.280125	0.0253
_FR--KAP_FR	-0.034931	0.029245	-1.194445	0.2358
_IT--KAP_IT	0.016753	0.071408	0.234606	0.8151
_LU--KAP_LU	0.208860	0.085360	2.446813	0.0166
_AU--KAP_AU	0.019104	0.024768	0.771342	0.4428
_FI--KAP_FI	-0.023775	0.015881	-1.497125	0.1383
_UK--KAP_UK	-0.044533	0.090871	-0.490064	0.6254
_SU--KAP_SU	0.034153	0.023895	1.429263	0.1568
_NE--KAP_NE	0.065702	0.047685	1.377837	0.1721
_BL--KAP_BL	0.106019	0.001392	76.13993	0.0000
_EST--KAP_EST	0.008810	0.020997	0.419569	0.6759
_LET--KAP_LET	-0.061856	0.023079	-2.680215	0.0089
_LIT--KAP_LIT	-0.132528	0.078669	-1.684631	0.0960
_HU--KAP_HU	-0.100287	0.025523	-3.929342	0.0002
_ML--KAP_ML	-0.010407	0.031290	-0.332611	0.7403
_PO--KAP_PO	0.066495	0.160177	0.415136	0.6792
_RO--KAP_RO	0.066456	0.146404	0.453922	0.6511
_SLN--KAP_SLN	0.081686	0.072465	1.127243	0.2630
_SLV--KAP_SLV	-1.818001	0.386325	-4.705880	0.0000
_CZ--KAP_CZ	0.078428	0.037615	2.084999	0.0403
_CY--KAP_CY	0.029019	0.047687	0.608537	0.5446
_BE--LOANS_BE	0.331616	0.226614	1.463351	0.1473
_DK--LOANS_DK	0.363078	0.036442	9.963069	0.0000
_GE--LOANS_GE	1.536988	0.432652	3.552481	0.0006
_IR--LOANS_IR	0.445867	0.082937	5.375986	0.0000
_GR--LOANS_GR	0.478024	0.039839	11.99880	0.0000
_SP--LOANS_SP	0.428220	0.089007	4.811074	0.0000

_PT--LOANS_PT	0.590643	0.069390	8.511919	0.0000
_FR--LOANS_FR	0.464405	0.085090	5.457791	0.0000
_IT--LOANS_IT	0.295115	0.091148	3.237753	0.0018
_LU--LOANS_LU	-0.075303	0.279132	-0.269776	0.7880
_AU--LOANS_AU	0.541126	0.117666	4.598818	0.0000
_FI--LOANS_FI	0.305084	0.126456	2.412569	0.0181
_UK--LOANS_UK	0.057771	0.141249	0.409004	0.6836
_SU--LOANS_SU	0.911431	0.141699	6.432183	0.0000
_NE--LOANS_NE	0.131608	0.031005	4.244692	0.0001
_BL--LOANS_BL	0.182154	0.003733	48.79066	0.0000
_EST--LOANS_EST	0.423220	0.028011	15.10915	0.0000
_LET--LOANS_LET	0.374492	0.012870	29.09824	0.0000
_LIT--LOANS_LIT	0.377292	0.061803	6.104797	0.0000
_HU--LOANS_HU	0.546212	0.076715	7.119983	0.0000
_ML--LOANS_ML	0.218969	0.037777	5.796298	0.0000
_PO--LOANS_PO	0.414832	0.202713	2.046399	0.0440
_RO--LOANS_RO	0.456227	0.149707	3.047474	0.0031
_SLN--LOANS_SLN	0.189293	0.120535	1.570433	0.1203
_SLV--LOANS_SLV	1.395911	0.173013	8.068240	0.0000
_CZ--LOANS_CZ	0.421515	0.083106	5.072040	0.0000
_CY--LOANS_CY	0.314412	0.197508	1.591891	0.1154
Weighted Statistics				
R-squared	0.992644	Mean dependent var		14.26546
Adjusted R-squared	0.987770	S.D. dependent var		31.44183
S.E. of regression	3.477108	Sum squared resid		967.2222
F-statistic	203.6801	Durbin-Watson stat		2.099286
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.721743	Mean dependent var		7.056059
Sum squared resid	967.2222	Durbin-Watson stat		2.104875

5. TESTING THE VERACITY OF THE RESULTS

For testing the model quality, it is highly recommended to use the stationarity tests for ordinary residual variables as it follows:

Table 2

Results of the stationarity tests for the proposed econometrical models

Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic selection of lags based on HQC: 0				
Newey-West bandwidth selection using Quadratic Spectral kernel				
Method	**Statistic**	**Prob.****	**Cross-sections**	**Obs**
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-21.8763	0.0000	21	95
Breitung t-stat	-2.99923	0.0014	21	74
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.99632	0.0000	21	95
ADF - Fisher Chi-square	71.6570	0.0029	21	95
PP - Fisher Chi-square	86.7201	0.0001	21	95
Null: No unit root (assumes common unit root process)				
Hadri Z-stat	9.84067	0.0000	27	134

6. CONCLUSIONS

The stationarity tests results suggest that on the unitary roots level can be identified certain individual unit root processes and consequently there exist certain systematic deviations corresponding to the stipulations made based on this empirical model. This result is not surprising due to the reduced dimension of the analysis series. Durbin - Watson test indicates some very good values, close to the optimum value of 2. In general, the quality of the model can be described as satisfactory and allows the elaboration of preliminary conclusions.

These are the following:

- The common coefficient shows that for all countries taken into account there is a possible positive effect of development of the financial system upon the economic growth;
- However, not for all countries taken into analysis the results are statistically significant; therefore, the capital market seems to play a significant positive role in the economic growth for Luxemburg, Bulgaria and Czech Republic; the banking system plays a significant positive role for the economic growth in Denmark, Germany, Ireland, Greece, Spain, Portugal, France, Italy, Luxemburg, Austria, Finland, Sweden, Netherlands, Bulgaria, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovakia and Czech Republic.
- The above-mentioned association is non-uniform for the observations set. There can be easily identified the fact that its maximal levels are registered in EU-15 countries, more precisely, the influence of the capital market upon the economic growth is very strong in Luxemburg (with a coefficient of 0,20), whereas the influence of the banking system upon the economic growth had registered the highest value in Germany (with a coefficient of 1,31). There can be observed high coefficients also in Romania and Hungary, where the pace of growth of the banking activity reached record levels during the last years, leading to an increase in the level of economic growth as well.

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Appendix 1

Descriptive statistics for the data used in the econometrical models

	GDP	Market capitalization	Banking loans
Mean	7.056059	16.29457	16.15205
Median	6.149465	16.34431	13.53834
Maximum	26.76265	96.59463	53.95332
Minimum	-8.964552	-60.30680	-11.52569
Std. Dev.	5.112277	25.19990	12.97358
Skewness	0.996275	-0.276716	0.785697
Kurtosis	5.432028	3.986801	3.457323
Jarque-Bera	55.19136	7.147023	14.95452
Probability	0.000000	0.028057	0.000566
Sum	945.5119	2183.472	2164.375
Sum Sq. Dev.	3476.005	84459.67	22385.74
Observations	134	134	134
Cross sections	27	27	27