FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN EASTERN EUROPE

Dan LUPU
Alexandru Ioan Cuza University of Iasi, Faculty of Economics and Business Administration
Iasi, Romania
dan.lupu@uaic.ro

Abstract: *This article analyzes for two countries in Eastern Europe, Romania and Bulgaria, the impact of financial development on economic growth, for the period 1993-2019. The methodology used is Markov Switching model and the results show that financial development influences at all times, low and growth, economic growth. However, there are differences between the two countries: for Bulgaria, the regimes and amplitudes are lower, while for Romania they are higher.*
Keywords: *Financial development, economic growth, Markov Switching regression*

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1. INTRODUCTION

The question whether the financial sector helps economic growth is a much debated one in the specialized literature, both for the developed and the least developed countries. Starting from the primary role of the financial intermediary system between depositors and investors, it is unanimously accepted by the scientific community for both developed and least developed countries that the proper functioning of the financial sector leads to economic growth. The two Eastern European countries, Romania and Bulgaria, after the fall of communism in the 1990s, experienced a sharp liberalization in the financial sector that subsequently led to sustained economic growth.

The mechanism by which the financial development influences the economic growth implies the most efficient allocation of the financial resources, from the holders of savings to the investors. At present, two theories have been developed in the specialized literature. The first theory, demand-following" hypothesis assumes a neutral effect of financial development on economic growth and was promoted by Schularick and Taylor (2012). The second theory, supply-leading hypothesis, assumes that entrepreneurs, through financial intermediation, obtain the necessary amounts for the development of the activity by transferring funds from the non-productive sectors. The followers of this theory are flesh in a much larger number than the first theory (Beck & Levine, 2004; Jalil & Ma, 2008).

The different results so far regarding the link financial development economic growth is given by the heterogeneity of the data analyzed in the specialized literature and of the econometric models used; lately, it has been observed that the two variables have a non-linear relationship, which responds better to the concrete reality (Abdmoulah & Jelili, 2013; Cecchetti, Kharroubi 2012; Demirguc-Kunt, Feyen, and Levine, 2013).

The two East European countries, Romania and Bulgaria experienced the transition from a communist system to a free market economy. Concurrent with the liberalization of the economy, there was also the liberalization of the financial system and the penetration on the internal market of European financial actors. The study of the connection between economic growth and financial development in the two countries was done in all the studies by using the linear relationship. However, from the major and abrupt changes of the variables it can be observed that the relation is a non-linear one. In these circumstances, our approach is to use non-linear regression to study the link between economic phenomena.

The present study contributes to the specialized literature in 3 directions: the first direction is given using the Markov Switching methodology for which different economic regimes can be generated; the second direction is given by the impact analysis and other macroeconomic variables, unemployment and inflation, in relation to the two variables analyzed previously; the third direction is given for establishing the growth and recession regimes for the two countries, regarding economic growth-financial development. The article is organized as follows: section 2 presents the main studies existing in the specialized literature; section 3 presents the methodology used; section 4 describes the main results obtained, and the last section presents the main conclusions.

2. LITERATURE REVIEW

Economic growth is inextricably linked to capital; and here it intervenes in the financial development landscape. In order to achieve sustainable economic growth, it is necessary to show as an intermediary the financial system between economists and investors. Under these circumstances, this relationship has been intensely debated in the specialized literature, especially since the 1990s.

So far, there is no unanimous opinion on this relationship between the two variables, regarding both the sign and the direction of causation. A first vision considers the role of finance on the economy, starting from the ideas advocated by Schumpeter (1911). With the development of endogenous growth theory, the number of studies that have shown that financial development contributes to economic development has increased considerably (Roubini and Sala-i Martin, 1992; King and Levine, 1996; Deidda, 2006).

A second vision considers the role of economic growth important: at the moment of GDP growth, the demand for financial services will increase, which will eventually lead to an increase in financial development. Robinson (1952), Stiglitz (1994) and Singh and Weisse (1998).

Levine (1999) analyzes for the period 1976-1993, 49 developed and less developed countries, using stock exchange to GDP as an indicator for financial development, and shows that there is a positive relationship between this indicator and economic growth,

capital and productivity growth. Ductor, Lorenzo, and Daryna Grechyna (2015) use the panel methodology for the period 1970-2010, across 101 countries, to study the relationship between financial development (private credit relative) and economic growth (real output growth); in the conditions in which there is a too fast growth of the consumer credit this is detrimental to real output growth. Singh and Weisse (1998) use two indicators for financial development (stock market and portfolio capital) and show the reverse effect of the economy towards financial development; the first time the economy grows and this subsequently leads to an increase in the financial sector.

From the point of view of the methodology, in the specialized literature, two main directions have been outlined: the first direction aims at analyzing the time series for separate countries and their evolution over time with regard to causality, one or two directional; the second direction aims at cross-country analysis and panel data for several countries.

Regarding the study of the phenomenon mentioned with the help of nonlinear relations, the studies are extremely few, and for the countries of Eastern Europe, there is none.

Jacobson, Tor, Thomas Lindh, and Anders Warne analyze the USA for the period 1948-1996 through the prism of three variables (GDP growth, private saving and financial development). The authors use Markov Switching regression and demonstrate that between the three variables there are links to the type of regime switching, especially at times of changes in the financial market. Chow, W. W., & Fung, M. K. (2013) Analyzes for the 69 developed and less developed countries the relationship between financial development and economic growth using a regime switching panel vector. The results show that for poor countries the regimes are longer than those developed; the causal relationship is between GDP Growth towards financial development, and vice versa does not manifest itself. Law and Singh (2014) shows, after analyzing a group of 87 countries using panel threshold, that there is a maximum point in the economic growth - financial development relationship; up to this point financial development brings benefits, after this point, the effects are negative. Chevallier (2012) analyzes the USA between 19847-2011 using Markov Switching models and shows that the uncontrolled development of the financial sector leads to negative effects on the economic growth.

Brasoveanu, Dragota, Catarama, & Semenescu, (2008) analyzes the relationship between the two variables for Romania, using the time series methodology and demonstrates that GDP growth positively influences financial development, the latter being dependent on the former. Dawson (2010) analyzes 13 countries in Eastern Europe using a model panel and demonstrates that economic growth is not jeopardized by a poorly developed financial sector. Caporale, Rault, Sova, & Sova (2015) analyzes 10 East European countries and shows that economic growth is negatively influenced by a still poorly developed financial sector in the areas of stock market and bank lending. Duenwald, Gueorguiev, and Schaechter (2007) analyzes Romania and Bulgaria and shows that the too rapid development of the banking lending sector, especially in the pre-crisis periods, leads to imbalances to economic growth.

3. THE METHODOLOGY

Based on the specialized literature, we will develop the following analysis model:

Economicgrowth=financialdevelopment+ control variables (inflation, unemployment) (1)

The indicators taken into account in the model have the following meanings:

Economic growth	- annual percentage growth rate of GDP
Financial development	- is calculated as the annual percentage total amount of domestic credit to GDP
Unemployment, Inflation	- control variables

The data are taken from the IMF's International Financial Statistics online database for the period 1995-2019; logarithms are used for data analysis for a number of variables.

Under these conditions, equation 1 becomes:

Economicgrowth = log(financialdevelopment)+log(inflation)+log(unemployment) (2)

However, the main objective of this study is the non-linear testing of the relationship between economic growth and financial development. The methodology used is Markov Switching regression, with two regime changes. The reason for which we have considered a model with two regime changes is given by the legislative and economic changes that occurred in the two countries, which led to consecutive periods of growth and recession. For the Markov model, we considered that regime-switching variables financial development, while inflation and unemployment were analyzed will be non-regime-switching variables. For the Markov type regime, we consider two states: 0 for the state of recession and 1 for the state of economic growth. The Markov MS model (2) can be written in this way:

$$\Delta Economicgrowth=\mu_{st}+\beta_{st}Z_t+\Sigma\Delta financialdevelopment+\Sigma\Delta inflation+\Sigma\Delta unemployment+\varepsilon_t \quad (3)$$

where:

ΔEconomicgrowth	- Increase / Decrease GDP
μ_{st}	- state-dependent intercept
$\beta_{st}Z_t$	- state dependent switching variable
Δinflation	- state-invariant variables

The probabilities associated with the MS regime (2) will be:

$S_t =$ *{0 - for probability 0*
{1 - for probability 1

In the MS model (2), the average will be analyzed according to the assumptions:

$\mu_{st} = \begin{cases} \mu_1 & > 0 \\ \mu_0 & \end{cases}$ *- and $\mu_1<\mu_0$ for regime 0 and $\mu_1>\mu_0$ for regime 1*

where $S_t = 0$ assume recession regime and $S_t = 1$ assume growth regime.

3. EMPIRICAL RESULTS

Descriptive statistics for the analyzed variables are presented in table no. As can be seen, there are significant differences between the two countries: GDP growth is higher in Romania (3.19) compared to Bulgaria (1.02), while financial development in Bulgaria (46.40) compared to Romania (23.44); inflation was higher in Bulgaria (188.10) compared to Romania (21.41), unemployment in Bulgaria (11.33) compared to Romania (6.96).

Table 1. Descriptive statistics

	GDP Growth	Finan_devel	Inflation	Unemployment
Bulgaria	1.0210	46.4017	188.1067	11.3308
Romania	3.1909	23.4474	21.1420	6.9637

Source: own calculations

To test the non-linearity relationship between economic growth finance, we will use the BDS test. The test assumes that hypothesis H0 that the series are linear, rejecting this hypothesis leads to the adoption of the hypothesis that the series are nonlinear. The BDS test results are presented in table no.2 and show that the relationship between the two variables is non-linear because for all dimensions the associated probability is lower than 0.005. Under these conditions, the Markov Switch model approach is suitable for non-linearity testing.

Table 2. Results of BDS test

	Dimension	GDP growth	Finan_devel	Inflation	Unemployment
Bulgaria	2	0.1246 (0.000)	0.1240 (0.000)	0.1024 (0.000)	0.0660 (0.000)
	4	0.2791 (0.000)	0.2463 (0.000)	0.2184 (0.001)	0.0925 (0.000)
	6	0.3090 (0.000)	0.2486 (0.000)	0.2949 (0.001)	0.1080 (0.000)
Romania	2	0.0603 (0.003)	0.1759 (0.000)	0.1479 (0.000)	0.3917 (0.007)
	4	0.1487 (0.000)	0.3617 (0.000)	0.3861 (0.000)	0.1889 (0.002)
	6	0.1246 (0.006)	0.3906 (0.000)	0.4830 (0.000)	0.4377 (0.003)

Source: own calculations

Markov Switch regression can only be applied if the series are I (0). Under these conditions, we will test the series with the Augmented Dickey – Fuller (ADF) test for

stationary ones. The results are presented in table no.3, and show that the series although initially are I (1), after differentiation become stationary I (0).

Table 3. Results of unit root tests

		GDP growth	Finan_devel	Inflation	Unemployment
Bulgaria	Level	-2.705 (0.086)	-2.049 (0.265)	-2.846 (0.066)	-2.001 (0.284)
	First difference	-7.161 (0.000)	-5.710 (0.000)	-5.258 (0.000)	-4.278 (0.002)
Romania	Level	-3.053 (0.053)	-1.770 (0.383)	-2.457 (0.138)	-1.047 (0.717)
	First difference	-6.587 (0.000)	-7.079 (0.000)	-14.104 (0.000)	-10.141 (0.000)

Source: own calculations

For Markov Switching analysis, we use the two regimes model for two reasons: it is better suited to the macro variables and the small sample analyzed. The statistics regarding the duration of the MS regime (2) are presented in table no.4. For Bulgaria, it can be seen that the regime with economic growth manifests in 6.60 years and the recession in 6.29 years. For Romania, the economic growth regime is in 5.28 years, and the recession regime in 1.46 years.

Table 4. Duration of regime classification of MS(2)

		High economic growth	Recession
Bulgaria	In % age terms	0.8486	0.1513
	Average duration	6.6057	6.2914
Romania	In % age terms	0.6821	0.3178
	Average duration	5.2881	1.4658

Source: own calculations

Next, we will present the results of MS regression for the two regimes. Table no. 5 presents the analysis of the two countries. For Bulgaria, there is a negative link between the two variables: for regime 1 the influence is negative (-0.15); for regime 2 the influence is also negative (-0.17). For Romania, also, the connection is negative, but more pronounced: for regime 1, the coefficient is -0.76, for regime 2, the coefficient is -0.12.

Table 5. Estimates of linear and MS model (1995–2019)

		Finan_devel	Inflation	Unemployment
Bulgaria	Regime 1	-0.1573 (0.000)	-0.0031 (0.000)	-0.7185 (0.000)
	Regime 2	-0.1755 (0.000)	-0.0079 (0.025)	-0.9582 (0.000)
Romania	Regime 1	-0.7656 (0.000)	-0.4756 (0.000)	0.8089 (0.384)
	Regime 2	-0.1272 (0.123)	-0.0663 (0.000)	-1.9315 (0.028)

Source: own calculations

However, these results are contradictory for the economies, and especially the negative relationship. Financial development contributes negatively to economic growth, which means that this variable has not yet reached optimum size. The results obtained are similar to those of other specialists in the field, which shows a negative influence of financial development. For the two countries, it is imperative to move to an even greater liberalization of the financial sector as well as a better harmonization with the economic sector.

The behavior of the two regimes, recession - economic growth, is presented in figure no. it can be easily seen that in Bulgaria, the regimes are longer, while in Romania the regimes are more visible and pronounced.

Figure 1 Markov Switching Regimes for Bulgaria

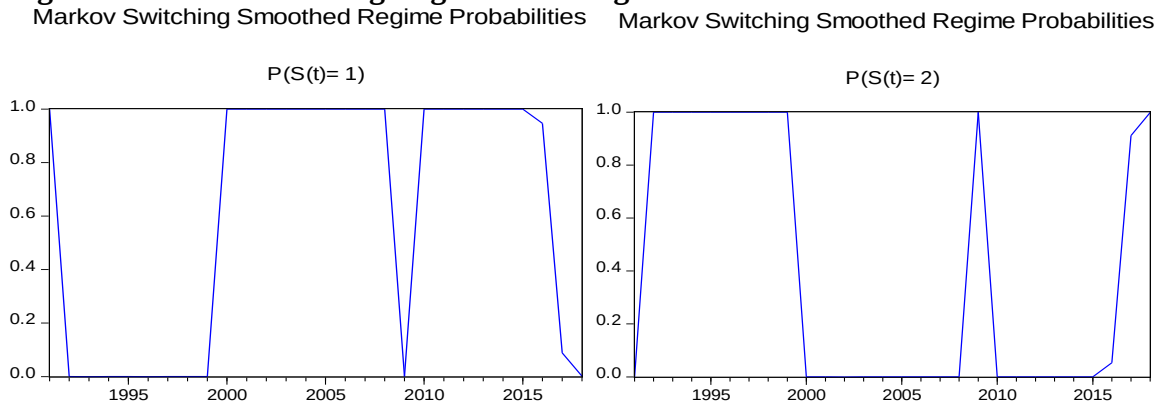
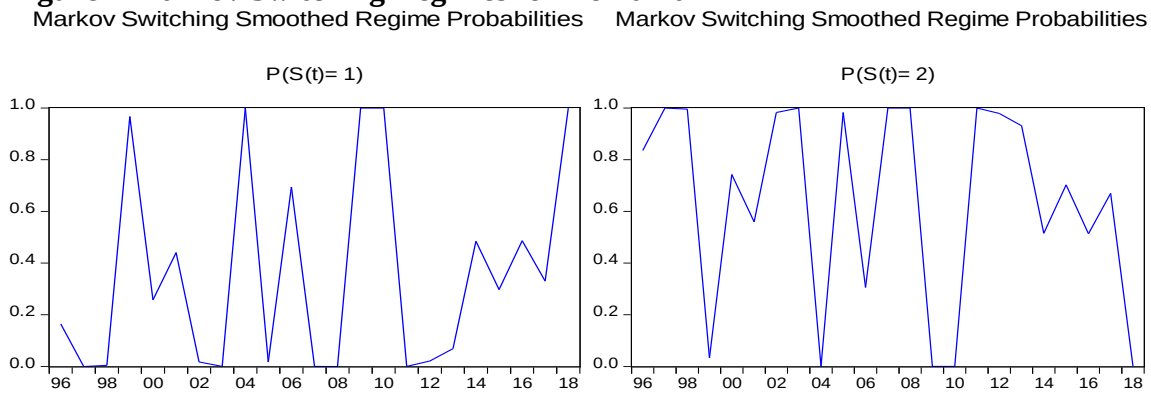


Figure 2 Markov Switching Regimes for Romania



4. CONCLUSION

This study analyzes the relationship between economic growth and financial development for the period 1995-2019, for Bulgaria and Romania. The methodology used is of the Markov Switching regression type with two regimes. The relationship between the two variables analyzed is a non-linear one during the transition period to the market economy. The results show that financial development has a negative influence on each of

the two regimes. However, for Romania, the results are stronger than in Bulgaria. In addition, when it comes to regimes, it can be observed that the two countries differ: for Bulgaria, the regimes are more pronounced and longer; for Romania, they are shorter and more pronounced.

Policy implications assume that the relationship between financial development and economic growth is non-linear and dependent on the regime of economic growth or recession. In addition to financial development, policymakers must also look at unemployment and inflation.

References

1. Abdmoulah, W., & Jelili, R. B. (2013). Access to finance thresholds and the finance-growth nexus. *Economic Papers: A Journal of Applied Economics and Policy*, 32 (4), 522–534
2. Beck, T., Degryse, H., & Kneer, C. (2014). Is more finance better? Disentangling intermediation and size effects of financial systems. *Journal of Financial Stability*, 10, 50–64.
3. Brasoveanu, L. O., Dragota, V., Catarama, D., & Semenescu, A. (2008). Correlations between capital market development and economic growth: The case of Romania. *Journal of applied quantitative methods*, *3*(1), 64-75.
4. Caporale, G. M., Rault, C., Sova, A. D., & Sova, R. (2015). Financial development and economic growth: Evidence from 10 new European Union members. *International Journal of Finance & Economics*, *20*(1), 48-60.
5. Cecchetti, S. G., & Kharroubi, E.. (2012). *Reassessing the impact of finance on growth*. Bank for International Settlements Working Paper No. 381.
6. Chevallier, Julien. Global imbalances, cross-market linkages, and the financial crisis: A multivariate Markov-switching analysis. *Economic Modelling* 29.3 (2012): 943-973.
7. Chow, W. W., & Fung, M. K. (2013). Financial development and growth: a clustering and causality analysis. *The Journal of International Trade & Economic Development*, *22*(3), 430-453.
8. Dawson, P. J. (2010). Financial development and growth in economies in transition. *Applied Economics Letters*, *10*(13), 833-836.
9. Deidda, L.G., 2006. Interaction between economic and financial development. *Journal of Monetary Economics* 53, 233–248
10. Demirgurc-Kunt, A., Feyen, E., & Levine, R. (2013). The evolving importance of banks and securities markets. *The World Bank Economic Review*, 27(3), 2013 476–490
11. Ductor, Lorenzo, and Daryna Grechyna. Financial development, real sector, and economic growth. *International Review of Economics & Finance* 37 (2015): 393-405.
12. Duenwald, Christoph, Nikolay Gueorguiev, and Andrea Schaechter. Too much of a good thing? Credit booms in transition economies: The cases of Bulgaria, Romania, and Ukraine. *Rapid Credit Growth in Central and Eastern Europe*. Palgrave Macmillan, London, 2007. 236-263.
13. Jacobson, Tor, Thomas Lindh, and Anders Warne. Growth, saving, financial markets, and Markov switching regimes. *Studies in Nonlinear Dynamics & Econometrics* 5.4 (2002).
14. Jalil, A., & Ma, Y. (2008). Financial development and economic growth: Time series evidence from Pakistan and China. *Journal of Economic Cooperation*, 29(2), 29–68
15. Gatti, Roberta, and Inessa Love. Does access to credit improve productivity? Evidence from Bulgaria 1. *Economics of Transition* 16.3 (2008): 445-465
16. King, R.G., Levine, R., 1993a. Finance and growth: Schumpeter might be right? *Quarterly Journal of Economics* 108 (3), 717–737
17. Law, Siong Hook, and Nirvikar Singh. Does too much finance harm economic growth? *Journal of Banking & Finance* 41 (2014): 36-44.

18. Levine, Ross. Financial development and economic growth: views and agenda. The World Bank, 1999, *Journal of Economic Literature*, Vol. 35, No. 2. (Jun., 1997), pp. 688-726.
19. Robinson, J., 1952. *The Generalization of the General Theory, the Rate of Interest and Other Essays*. Macmillan, London, pp. 67–142.
20. Roubini, N., Sala-i Martin, X., 1992. Financial repression and economic growth. *Journal of Development Economics* 39, 5–30
21. Schumpeter, J. (1912). *The theory of economic development: An inquiry into profits, capital, credit, interest and business cycle*. Cambridge Mass: Harvard University Press
22. Singh, Ajit; Weisse, Bruce A. Emerging stock markets, portfolio capital flows and long-term economie growth: Micro and macroeconomic perspectives. *World development*, 1998, 26.4: 607-622.
23. Schularick, M., & Taylor, A. M. (2012). Credit booms gone bust: Monetary policy, leverage cycles, and financial crises, 1870–2008. *American Economic Review*, 102(2), 1029–1061
24. Stiglitz, J., 1994. The role of the state in financial markets. In: Bruno, M., Pleskovic, B. (Eds.), Proceedings of The World Bank Conference on Development Economics. World Bank, Washington D C.