Available online at www.sciencedirect.com

ScienceDirect

Procedia Economics and Finance 32 (2015) 1332 – 1341

Procedia Economics and Finance

www.elsevier.com/locate/procedia

Emerging Markets Queries in Finance and Business

Correlation analysis between structure financial system and economic growth in Romania

Dalia Simion[a,]*, Marieta Stanciu[a], Sabin Armăşelu[a]

[a]*University of Craiova, Faculty of Economics and Business Administration, Str. A.I.Cuza, no. 13, Craiova, Dolj*

Abstract

Essential component of a country's economy, the financial system includes all financial relations between different actors in the process of formation, distribution and use of financial resources. The major objectives of an economy such as stability, economic growth and sustainable development are closely linked to the ability of financial systems to undertake such objectives. However, the main objective of the financial system in an economy is that of ensuring long-term economic growth through efficient financing of the economy. Financing economy refers to how the procurement and allocation of resources, both at micro and macro level, which can be divided into three categories:, Equity Finance (self-financing); Financing the capital market (direct funding); Debt financing (indirect financing). Elements of the financial system in our country are: financial markets (money market and capital market), financial intermediaries (banks, insurance companies, and investment companies), and financial infrastructure (payment systems and clearing houses). In general, emerging markets are characterized by financial systems based mainly on banks, while in developed countries for financial systems is based on the capital market. This may explain why emerging markets return after a period of crisis, it is cumbersome and lengthy. We believe that there should be a balance between the two components of the financial system so that recovery of losses incurred in a period of crisis, to be made in a short time. In this paper we use several variables to measure the development of the two components of the financial system and the banking capital market, such as market capitalization, leading interest rates, average annual growth rate in money and quasi-money, bank capital to assets ratio, domestic credit provided by banking sector. We analyzed, using SPSSS, the main indicators characterizing the relationship between financial sector development in our country, showing that there is a significant relationship between capitalization and loan rate, M2, the rate of bank assets and domestic credit from the banking sector.

Selection and peer-review under responsibility of Asociatia Grupul Roman de Cercetari in Finante Corporatiste

* Corresponding author. Tel.: +40-744-614-494.
E-mail address: daliasimion@yahoo.com.

Selection and peer-review under responsibility of Asociatia Grupul Roman de Cercetari in Finante Corporatiste
doi:10.1016/S2212-5671(15)01510-5

Keywords: structure of the financial system, growth, capital market, market capitalization, domestic credit.

1. Introduction

Essential component of a country's economy, the financial system includes all financial relations between different participants in the process of formation, distribution and use of cash resources.

The major objectives of an economy such as stability, economic growth and sustainable development are closely linked to the ability of financial systems to meet these objectives.

Generally, the concept of financial system designates the multitude of financial intermediaries (commercial banks, investment firms, insurance companies, credit unions, etc.) and instruments, which together are responsible for resource allocation and redistribution of risks in the economy.

Financial systems permit redistribution funds from economic agents and population that have surplus to those who need these funds is done as a smoothing of consumption expenditure of some others, allowing risk sharing between the two categories.

Therefore, the main objective of the financial system in an economy is to provide long-term economic growth through effective financing of the economy.

Financing economy refers to how the procurement and allocation of resources at both the micro and macro level, which can be divided into three categories:

- Financing from own sources (self-financing);
- Financing the capital market (direct funding);
- Debt financing banking market (indirect financing).

Self-financing is made from its own resources accruing to cover financing needs.

Direct financing is done by transferring funds to the holders of capital on financial securities in the primary market for capital.

Indirect financing is achieved through the involvement of intermediaries (financial institutions or institutional investors), whose role is to link supply and demand for capital.

Due to funding arrangements presented, we can structure financial systems in financial systems focused on capital market and bank-oriented financial systems.

The relationship between the structure of the financial system and economic growth has long been debated in the literature and there is a unanimous opinion embraces.

In the early twentieth century, J. Schumpeter (1912) argued that the proper functioning of banks can increase economic growth by stimulating technological innovation by identifying and funding companies with the best chance of successfully implementing innovative procedures.

There are also opinions (Robinson, 1952) that the financial system does not influence growth, but they just follow or reflect economic development.

Traditional neoclassical economic growth theory does not take into account funding, suggesting that the financial system is not essential. The main ways of achieving growth are increasing the technological frontier generated by factor accumulation and innovation that generates moving technological frontier outwards. For emerging countries, the accumulation is an essential component because, achieve technological frontier is a lengthy process.

Early models (Solow, 1956 and Swan, 1956) focus on factor accumulation as the engine of growth. In these models, reproducible inputs, such as physical and human capital, ultimately show diminishing returns.

This feature leads the models to predict the convergence of economies towards a steady state. Growth based on factor accumulation stops eventually. Long run growth takes place as a result of exogenous technological progress (Allen, Oura, 2004).

Moreover, some economists just do not believe that the finance -growth relationship is important. R. Lucas, in 1988, asserts that economists "badly over -stress" the role of financial factors in economic growth, while development economists frequently express their skepticism about the role of the financial system by ignoring it – A. Chandavarkar, in 1992. For example, a collection of essays by the "pioneers of development economics," including three Nobel Laureates, does not mention finance as suggested by G. Meir and D. Seers, in 1984.

Economic growth is a discontinuous phenomenon, with rapid growth periods, which end in financial crises and periods of low growth for sustainable periods. Fluctuations in economic growth can be explained by financial systems.

In periods of substantial growth, entrepreneurs are tempted to take undiversified risks to achieve greater profitability. This risk taking may lead to significant increases, but at the same time can lead to financial crises. If a crisis is the effect of the explosion of bubbles in asset prices, it can have a negative impact on economic growth, as if the Great Recession in the U.S. and Japan in the 1990s and the global crisis of 2007-2008.

Interdependence of financial systems and financial crises structure was studied by Allen F., X. Gu and O. Kowalewski, 2012, showing that there is a significant inverse relationship in the short term, the development of the banking sector and capital market, both in banking crises and during the stock crash sites.

In the interest of sustainable economic growth, special attention should be given to policies for avoiding bubbles, contagion and financial instability.

Some authors (Chakraborty and Ray, 2006) argue that the structure of financial systems is not important for growth, it is essential that the efficiency of the financial system solves the problem of agent. Moral hazard problems in the companies can find a good solution by monitoring banking. Therefore, firms with high levels of debt should be based on bank monitoring, while firms with substantial net worth should seek funding in the capital market.

For emerging countries, Levine (2002) argues that financial systems focused on banks promote faster growth than financial systems oriented capital market.

In general, for emerging countries, the banking sector is the most important component of the financial system, while developed countries have financial systems oriented capital market. There are exceptions, such as Germany, France, Japan, the banking market is the basis of the financial system.

Although there is no universally accepted view of what kind of financial system should exist in a country (focused on banks or capital market oriented), we consider the existence of a balanced financial system is able to contribute to an sustainable economic growth.

2. The structure and evolution of the financial system of Romania

In our country, there has no long been a strong and well organized financially system. With the evolution of society the expanded and diversified financial relations, outlining the financial system with the following elements: financial markets (money market and capital market), financial intermediaries (banks, insurance companies, investment companies, etc.), and financial infrastructure.

In recent decades, under the impact of globalization of national economies, financial systems have undergone profound transformations caused mainly by increased competition among financial institutions and between markets and the adoption of new requirements on transparency and profitability in the financial industry.

Globalization of the financial system, often makes markets to lose national character, transactions were performed in "financial centers", which focuses most capital.

The financial system of Romania is one focused on the banking system due to poor development of the capital market in our country, driven mainly by the long period of disruption (50 years) of operation. The institutional reconstruction of the capital market was not easy in any aspect, from the legislative, complete with that of public education in the spirit of notions long forgotten or unknown.

In this context, the size of the banking sector (quantified as total assets to GDP) is a very important element in maintaining financial stability because it can affect the entire financial system risks and those risks transmission (contagion effect).

Evolution of the financial system in our country is shown in Figure 1

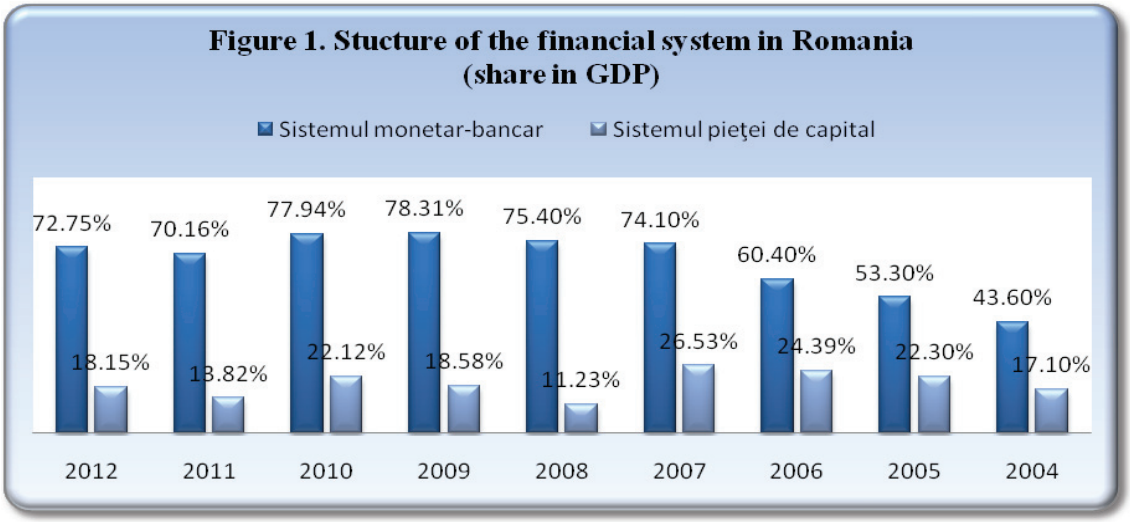

Fig. 1. Evolution of the financial system in our country

As can be seen banking monetary system has had an upward trend compared to the stock market, which has experienced some turbulence.

In the 10 years since the resumption of exchange transactions on the capital market in Romania, in 2005, was one of the records: market capitalization (which exceeded 15 billion, representing about 23% of GDP), the number of active investors indices stock, total turnover and number of transactions traded stock in a single trading session highs reached (exceeded for the first time in ten years the threshold of 10,000 operations / day).

In late 2007 began to appear the first signs of the financial crisis that would affect the international stock markets. The effects were propagated and the emerging markets of Central and Eastern Europe, including the Romanian, positive developments in recent years is stopped. Although there were decreases in activity on all stock markets, and the financial and economic context was not favorable capital markets, BSE has managed to register a positive result for 2008, very close to the level proposed.

Extension of the economic and financial crisis was felt in 2010. Thus, although the capital market in Romania has managed to record positive developments in 2010, they were not accompanied by significant increases in liquidity. While 2010 has brought BSE significant quantitative changes, which are reflected in the stock indices and indicators, there were still a number of events that have relevance mainly qualitatively and will undoubtedly influence the development future domestic stock market. We note first debut at the Bucharest Stock Exchange has launched the first series of structured products in Romania. Another milestone for the local stock market was the decision by the Board of Governors has approved the introduction of trading in the alternative trading system operated by BSE, the first in Eastern Europe, the shares issued by Daimler AG , one of the biggest producers of premium cars and commercial vehicles in the world.

Romanian stock market evolution and dynamics must be considered in the context of financial, economic and political crisis. 2011 showed how much they have expanded the boundaries of the Romanian capital market universe, a universe which is not a national or regional level, but became one strongly influenced by European and international financial markets

Of problems in the capital market in the second half of 2007, only indirectly affect the financial stability of our country through the real economy and bank liquidity. The explanation can be found in the fact that Romanian banks had exposures to financial instruments that were at the origin of the global financial crisis.

The banking sector, the dominant component of the Romanian financial system has evolved in 2009 on an upward trajectory, characterized by increasing intermediation process (but still below the EU average), increased dynamic lending steady decline in deposits ratio loans , call banks' increased external financing.

Bank capitalization increased significantly and remained at levels consistent liquidity. Credit risk is the main vulnerability of the banking sector.

2010 marked a negative profitability of the banking sector, but that was not a general feature, located especially in the small and medium banks.

In the period 2011-2012, international economic and financial environment has been heavily influenced by the sovereign debt crisis. Against this background, our country has managed to maintain its sovereign access to external financing by issuing bonds in the U.S. market and the European market. Although the growth of the Romanian economy rebounded in 2011 to positive levels, dynamic assets of financial institutions was below GDP growth.

Looking at the components of the financial system in our country, we find that credit institutions hold a dominant position strengthened in recent years, while NFIs recorded declining trend from year to year (Figure 2).

During the period under review, there is a tendency to increase the share of private pension funds and non-banking financial institutions sector reduction.

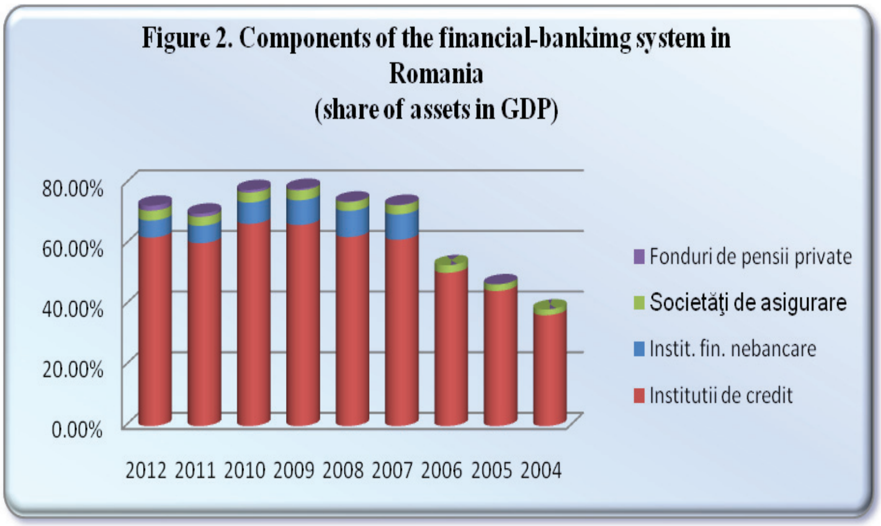

Fig. 2. NFIs recorded declining trend from year to year

During the period under review, there is a tendency to increase the share of private pension funds and non-banking financial institutions sector reduction.

Regarding the capital market in our country, its evolution in the last period (Table no.1) suggests that its role in the economic development of the country is part of a growing trend.

Table 1. Evolution of the capital market in Romania

Year	Volume	Value (mil. RON)	Number	Capitalization (mil RON)
2012	12.576.219.119	9.599,77	870.510	97.720,86
2011	16.637.856.665	11.032,99	1.008.645	70.782,20
2010	13.505.548.532	8.351,87	912.276	102.442,62
2009	12.263.248.194	7.040,82	1.506.557	92.401,25
2008	11.007.312.872	8.710,59	1.718.084	57.842,31
2007	14.234.962.355	13.802,68	1.544.891	85.962,38
2006	13.677.505.261	9.894,29	1.444.398	73.341,78
2005	16.934.865.957	7.809,73	1.159.060	56.065,58
2004	13.007.587.776	2.415,04	644.839	34.147,40
2003	4.106.381.895	1.006,27	440.084	12.186,60
2002	4.085.123.289	709,76	689.184	9.158,00
2001	2.277.454.017	381,27	357.577	3.857,30
2000	1.806.587.265	184,30	496.887	1.072,85

Source: Bucharest Stock Exchange, www.bvb.ro

Capital market in Romania decreased in 2008, both indices and quotations. This was due to the contagion effect resulting from structural interdependencies between financial institutions. Decrease in market capitalization in 2008 was driven by lower prices for most securities traded reference to BSE, which negatively influenced the general market liquidity, measured by value exchanges of shares made in the trading system. Meanwhile, the international financial context reduced the development of emerging markets in eastern Europe.

In response to the high volatility of the capital markets, investors have turned to low-risk financial instruments such as bonds and government securities.

3. Research Methodology

Our work focuses on examining the correlation between the structure of the financial system and economic Growth of our country. We considered a set of data for a period of 19 years, between 1994-2012, published by the Bucharest Stock Exchange, National Bank of Romania and the World Bank.

We will use indicators to assess the size of the banking sector and the capital market.

To characterize the stock market we considered important indicator of stock market capitalization to GDP ratio, which is equal to the total value of shares (share price multiplied by the total number of shares outstanding) of GDP. This indicator highlights the dimensions of stock market size relatively to economy.

We have also considered the rate of turnover of the capital market, which is equal to the ratio of the total value of shares, traded and market capitalization. It measures the activity or liquidity of the stock market relative to its size. A capital market small, but active, will have a high turnover, while a large capital market, but less liquid, will have a low turnover.

The banking sector is the largest part of the financial sector. To highlight the size of this sector, we included a series of indicators to measure the structure, efficiency and stability of this sector, such as the rate of domestic credit provided by the banking sector to GDP rate loan, the average rate of growth of money supply (M2).

The most important function of financial intermediaries is the allocation of credit. Accordingly, a first indicator that captures this function, the indicator Domestic credit provided by banking sector relatively to

GDP. It is defined as private sector claims monetary bank deposits to GDP. Countries with high levels of credit to GDP showed a rapid increase registered the fastest rate of poverty reduction (Beck, Levine and Loayza, 2000).

The second indicator considered is the loan rate, which is the bank rate that usually meets the needs of medium and short-term financing from the private sector. This rate is normally differentiated according to the creditworthiness of borrowers and objectives of financing.

Average annual growth of broad money (M2) comprises currency in circulation (banknotes and coins) and deposits that are readily convertible into cash. Dynamics of money is measured as the difference between the totals at the end and the money the previous year.

Using the above variables, we conducted a regression model with the independent variables: GDP growth in our country and as dependent variables: the share of market capitalization to GDP (Cb) and the rate of turnover of shares traded (Ts), the rate loan (Rîmpr), domestic credit (CRD), the growth rate of broad money (M2).

The regression model is as follows:

$$PIBcr = \alpha_1 \cdot Cb + \alpha_2 \cdot Ts + \alpha_3 \cdot R_{impr} + \alpha_4 \cdot C_{rd} + \alpha_5 \cdot M_2 + \varepsilon \tag{1}$$

To solve the regression model we used SPSS (Statistical Package for the Social Science), which allows the treatment of statistical data without requiring knowledge of calculation formulas, combining the possibilities of statistical processing facilities provided by spreadsheet programs.

Indices of central tendency, dispersion and shape distribution of the variables involved in the model is presented in Table no. 2. witch containing general statistics of the regression equation.

Table 2. Indices of central tendency, dispersion and shape distribution of the variables involved in the model

	Mean	Std. Deviation	N
PIBcrestere	20,21	88620501092,74	19
Cb	10,154371	8,8564230	19
Ts	19,5211	21,29822	19
Rimpr	36,430041	24,1161412	19
M2PIB	32,905985	3,7488631	19
Crd	28,431235	15,2725906	19

To study the intensity of the relationship between variables, we used correlation analysis, which is expressed by: covariance, the Pearson correlation coefficient, Pearson correlation coefficients report nonparametric correlation.

Correlations table comprises a correlation coefficient matrix in which the values are distributed symmetrically on both sides of the diagonal of the correlation coefficients equal to 1, that the correlation of each variable to itself. On both sides of the diagonal of the table are shown the values of correlation coefficients between variables, pairwise, and values of materiality (Sig.) corresponding to the number of observations considered (N).

A correlation coefficient equal to +1 indicates a perfect direct relationship between variables. A correlation coefficient equal to -1 indicates a perfect inverse relation.

Testing the significance of the correlation coefficient is performed using t test. Value Sig. appropriate, is less than 1, which means that the chances are less than 1% of error, if we say that there is a significant correlation between variables.

The parameter estimation of the regression model is known fitting model and includes: Model Summary, Coefficients, and Statistical Residual.

Model Summary table shows the correlation coefficient (R), the ratio of determination (R2), the fair value of R and standard error of the estimate.

Table 3. Correlations table

		PIBcrestere	Cb	Ts	Rimpr	M2PIB	Crd
Pearson Correlation	PIBcrestere	1,000	,634	-,340	-,843	,736	,903
	Cb	,634	1,000	-,244	-,796	,441	,362
	Ts	-,340	-,244	1,000	,368	-,017	-,276
	Rimpr	-,843	-,796	,368	1,000	-,579	-,616
	M2PIB	,736	,441	-,017	-,579	1,000	,818
	Crd	,903	,362	-,276	-,616	,818	1,000
Sig. (1-tailed)	PIBcrestere	.	,002	,078	,000	,000	,000
	Cb	,002	.	,157	,000	,029	,064
	Ts	,078	,157	.	,061	,472	,126
	Rimpr	,000	,000	,061	.	,005	,003
	M2PIB	,000	,029	,472	,005	.	,000
	Crd	,000	,064	,126	,003	,000	.
N	PIBcrestere	19	19	19	19	19	19
	Cb	19	19	19	19	19	19
	Ts	19	19	19	19	19	19
	Rimpr	19	19	19	19	19	19
	M2PIB	19	19	19	19	19	19
	Crd	19	19	19	19	19	19

Value R takes values in the interval (-1, 1) and show whether or not there is a correlation between the dependent variable considered (GDP growth) and the independent variables. From the Table. 4, we observe that R = 0.981, which means that between GDP growth and other variables are linked dependent considered linear, direct and very close.

Report of determination R2 (R Square) values between 0 and 1, and is useful for determining whether the regression model is the best. For variables considered R Square = 0.962, which means that 96.2% of the variation in GDP is explained by variation in market capitalization, turnover rate of the capital market, domestic loan rate, money supply and lending rate.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0,981[a]	0,962	0,947	2,33	0,962	6,175	5	13	0,000	2,014

a. Predictors: (Constant), Crd, Ts, Cb, M2PIB, Rimpr
b. Dependent Variable: PIBcrestere

Regression coefficients, included in Table. 5 shows the coefficients of the regression model unstandardized estimated standard errors of their standardized regression coefficients of the corresponding standard errors, as well as the statistical t-test values and the values of Sig. appropriate.

Table 5. Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,961	7,079		3,345	,005
	Cb	16,639	9,202	,161	1,687	,115
	Ts	18,104	2,754	,045	,693	,500
	Rimpr	-12,700	4,569	-,350	-3,094	,009
	M2PIB	-4,863	2,704	-,189	-1,719	,109
	Crd	4,871	6,296	,796	7,003	,000

a. Dependent Variable: PIBcrestere

I built the following graph to highlight the shape distribution of the dependent variable "GDP growth".

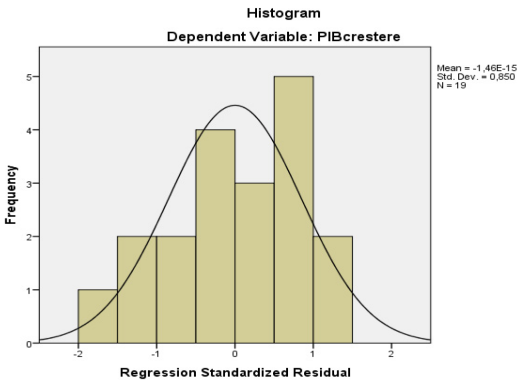

Fig. 3. Shape distribution of the dependent variable "GDP growth".

4. Conclusions

The main objective of a financial system in an economy is to provide long-term economic growth through effective financing of the economy.

Financing economy refers to how the procurement and allocation of resources at both the micro and macro level, which can be divided into three categories:

- Financing from own sources (self-financing);
- Financing the capital market (direct funding);
- Debt financing banking market (indirect financing).

Generally, emerging markets are characterized by financial systems based mainly on banks, while their financial systems in developed countries are based on the capital market. Thus, it can explain why emerging markets return after a period of crisis, is cumbersome and lengthy.

Due to funding arrangements presented, we can structure financial systems in financial systems focused on capital market and bank-oriented financial systems.

Using a data set on the structure of the financial system of Romania and economic growth, we investigated the link between them. The data covers the period 1994-2012, including the financial sector turmoil caused by the financial crises of 1997.2008. I found that there is a direct relationship between GDP, growth on the one hand, and market capitalization and credit to the banking sector, on the other hand. This means that any increase in the growth of capitalization grants and domestic credit growth will lead to economic development by increasing GDP.

On the other hand, we found that there is an inverse relationship between GDP growth and lending rate and the rate of money supply, which means that a higher loan rate causes a decrease in GDP.

The financial system of Romania is one focused on the banking system due to poor development of the capital market in our country, driven mainly by the long period of interruption of operation. In this context, the banking sector is a very important element in maintaining financial stability because it can affect the entire financial system risks and transmission risks.

References

Allen, F., Oura, H. (2004), Sustained economic growth and the financial system. IMES Discussion Paper Series No. E-17.

Allen F., Xian Gu, Kowalewski. (2012), Financial crisis, structure and reform, Journal of Banking & Finance, no. 36 (2012) 2960–2973

Bailliu, J. (2000), "Private Capital Flows, Financial Development, and Economic Growth in Developing Countries." Bank of Canada WP 2000-15.

Beck, T., Demirgüç-Kunt, A., Levine, R. (2010), Financial institutions and markets across countries and over time: the updated financial development and structure database. The World Bank Economic Review 24 (1), 77–92.

Beck, T., R. Levine (2002), "Industry Growth and Capital Allocation: Does Having a Market- or Bank-based System Matter?" Journal of Financial Economics 64.

BeckT., Levine R., Loayza N. (2000), Finance and the sources of growth, Journal of Financial Economics, vol.58, p.261-300

Bekaert, G., C. Harvey, and C. Lundblad. (2001). "Emerging Equity Markets an Economic Development." Journal of Development Economics 66, 465-504.

Benhabib, J. and M. Spiegel (2000), "The Role of Financial Development in Growth and Investment." Journal of Economic Growth 5, 341-360.

Chakraborty, S., and T. Ray (2006). "Bank-based versus market-based financial systems: A growth-theoretic analysis," Journal of Monetary Economics, 53, 329 – 350

Demirgüç-Kunt, A., Levine, R.(2001), Bank-based and market-based financial systems: cross-country comparisons. In: Demirgüç-Kunt, A., Levine, R. (Eds.), Financial Structure and Economic Growth: A Cross Country Comparison of Banks, Markets, and Development. Oxford University Press, New York.

Fîrţescu B. (2008), "Romanian financial system and economic growth", The Annals of The "Ştefan cel Mare" University Suceava. Fascicle of The Faculty of Economics and Public Administration, No.8

Levine, R.(2002), Bank-based or market-based financial systems: which is better? Journal of Financial Intermediation 11 (4), 398–428.

Minsky H.P. (2011), Howstabilizean unstable economy, Ed. Publica, Bucureşti

Robinson J. (1952), The Rate of Interest and Other Essays London: Macmillan (1952).

Lucas R. (1988), On the Mechanics of economic development, Journal of Monetary Economics, No.22, p.3-42, North-Holland

Schumpeter J. (1912), Economic Doctrine and Method: An Historical Sketch, Publication Information New York: Oxford University Press, 1954, translated from the German 1912

Solow R. M.,(1956), Contribution to the Theory of Economic Growth, The Quarterly Journal of Economics, Vol. 70, No. 1, pp. 65-94

Tobă D., Simion D. (2004), Teorie microeconomică. Modelarea matematică a proceselor microeconomice, Editura Universitaria, Craiova

www.bvb.ro

www.bnr.ro

www.worldbank.com