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THE SOUNDNESS OF THE FINANCIALSYSTEMS IN CEE COUNTRIES

Empirical study

Keywords:
New EU member countries
Financial crisis
Financial soundness indicators
European integration

JEL Classification
G21, G28, P52

Abstract

The financial system is vitally important for the real economy, contributing decisively to economic activities. The paper aims to examine the features of the financial system of Central and Eastern European countries (Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Poland, and Romania), the major imbalances accumulated during the period preceding the onset of the current global economic crisis and the measures taken by monetary and financial authorities to ensure the continuity of European financial integration. Moreover, in this paper an empirical analysis was developed, investigating the major implications of the crisis on the financial soundness indicators perceived in the selected countries, in the period 2008-2013. The analysis conducted in this paper suggests that the financial system is characterized by a high sensitivity, being subjected to pressures from the international financial turmoil, observing the increasing tendency of current risks.

I. Introduction

The financial solidity has faced noteworthy challenges in the last period due to the international economic pressures; therefore it was remarked that the financial soundness is strongly linked with the specifics of each economic system, especially with the promoted economic and monetary policies.

The financial stability issue refers to a restoration of confidence in the financial system, by promoting sustainable economic growth and mitigation of risks that occur in this context.

The international financial crisis has highlighted the weaknesses of each economy, both in terms of national and international levels, providing a comprehensive framework regarding the event risk in the financial system, mainly the ultimate risk with devastating effects, namely systemic risk.

The major objective of this paper refers to an assessment of the main disparities accumulated during the economic crisis in the financial systems of Central and Eastern Europe. Moreover, it aimed to outline the implications of the crisis on the financial soundness indicators and also the major measures taken by monetary and governmental authorities. Compared to previous studies the current one is different in the following ways: it analyses the financial systems from seven countries in Central and Eastern Europe; and it focuses on a more recent period, namely 2008-2013, outlining the major measures taken by monetary authorities to counteract the negative effects of the subprime and sovereign debt crises.

The study is divided into *four sections*: *the first part* contains some introductory remarks on the importance of the theme; *the second part* is devoted to a review of the relevant literature; *the third part* highlights the financial consequences arising from the economic crises, and the notable measures taken during the crisis in the financial systems of CEE countries; the paper ends with a *concluding summary*.

II. Literature Review

The current economic crisis was reflected, first, on the international financial markets, but the propagation was relatively fast also on the national economies, through the transmission channels, such as financial channel, the exchange rate or the balance of wealth and confidence. Due to the strains observed in the international or regional environment, mainly the emerging economies were affected. This issue was based on their weak capacity of dissipating the adverse effects of the crisis, which is caused by the underdevelopment of the economic and financial structures and also of the fragility of institutional bodies.

It's essential to indicate that the subprime crisis was preceded by other crises that have brutally damaged the world economy, such as The Oil Crisis, The Great Depression, Black Monday, The Hyperinflation from Germany, The Economic Crisis from Argentina, The Crisis from Mexico, among others. However, if we were to relate to the long-term influence of each of them, we can certainly say that the current international crisis would fall in the top position.

On the contextual of a fragile economic environment, the literature has turned its attention towards the issue of financial system stability and soundness, pointing out the lessons of the current international crisis. In this respect, it may be mentioned the following papers: *Monetary Policy and Financial Stability: Some Future Challenges* (Ingves, 2011), *Lessons from the Crisis: Monetary Policy and Financial Stability* (Aucremanne and Ide, 2010), *Lessons from the crisis for monetary policy and Financial stability* (González-Páramo, 2010). Most of the studies from literature focused on the relationship between monetary policy and financial stability, closely related to the implications of the financial stability and the macroprudential orientation (Hufbauer and Xie, 2010;Borio, 2011) and less on the soundness of the entire system.

The recent financial crisis has affected significantly the financial system from the analysed countries, but a notable impact was observed on the banking sector. It's considered that the current crisis has affected the banking system of so high intensity, that it cannot be compared with previous turbulences, suggesting the indispensable role of the central bank in the financial system; thusit can be believed that the crisis has shaken the comfortable world of central banks (see Borio, 2011).

The international financial crisis through its extremely serious effects has outlined the vital need of a macroprudential approach and also of a proper supervision framework, to support the entire financial system and reduce the risks at each level.

In the literature it has been noted the predisposition of pro-cyclicality of the financial system, so the underestimation of risks occurs frequently, followed closely by the difficulties determined to the exposure to different risk factors. In this context it was necessary to promote a countercyclical policy. According to the governor of National Bank of Romania, the macroprudential policies consist in a set of measures taken to ensure the health of the financial system or to prevent the problems issued on one part of it (Isărescu, 2011). Regardless of the performance of macroprudential policies, they cannot be considered anappropriate substitute for effective macroeconomic policies, thus it was suggested the efficiency of a combination of macroeconomic and prudential policies to avoid shocks in the economy (see Viñals, 2011).

In order to guarantee a certain coherence, comparability and transparency among countries, in assessing financial stability and soundness, the

International Monetary Fund has acted towards the definition of a set of *financial soundness indicators* – FSI, which are segmented in two sets, namely: the core set and the encouraged set (where the non-financial institutions, the households and the mortgage market are described). On the other side, the European Central Bank has promoted a set of *macroprudential indicators* – MPI, that have, generally, the same mission as the one developed by IMF, namely to provide benchmarks for the solidity of the financial system. Both categories aimed especially at the banking sector, with reference to capital adequacy, asset quality, and income, profitability, liquidity and risk sensitivity; therefore the methodology used in their corpus is relatively similar. Regardless of the similarities between the mentioned categories, in the literature there were observed also differences, thus illustrating the difficulty in the interpretation of similar indicators, different costs in reporting methodologies etc. (see Agresti et al., 2008).

In the speciality literature there were detected studies oriented towards an in-depth analysis of the financial soundness indicators in order to outline the overall picture of the banking sector. For example, in the study of return on assets, the main indicator was decomposed in several terms (Du Pont model) or just in two terms, namely return on investment funds – *ROIF*, and return on financial leverage – *ROFL*, with the purpose of ensuring a difference between asset's performance and liabilities' performance.

Another model used in the assessment of bank soundness and performance was the Compound Annual Growth Rate –CAGR. On the other hand, in the literature there were perceived the AHP Model (Analytic Hierarchy Process) which is the base of a complex decision framework, and SFA method (Stochastic Frontier Analysis) which aims to estimate the frontier efficiency (Andrieș, 2009).

In an environment dominated by a growing level of risks in the financial system, whose very existence threatens the continuous functioning of the financial system, it was observed a tendency to use additional indicators to quantify the level of solidity, namely Herfindahl-Hirschmannindex (IHH),the ownership structure, the market share of the top banks etc. Another highly used indicator is Z score, which estimated the probability of default of an institution (Berger et al., 2009).

From another perspective, the issue of financial soundness was intensely debated through the perspective of *monetary integration* among European states.The process of European integration may have strong repercussions on the financial stability, and more specifically for the performance and soundness of the banking sector. Regarding the more recent period, it was perceived an improvement in the process of European integration. This gives support to the argument that the launch of the euro currency, as well as the initiatives stemming from the Single Market and the Financial Services Action Plan, has been operative. However, in most of the recent research papers, the persistence of cross-country heterogeneity is also clearly outlined, aspect that can be explained through the historical differences in market structures, bank supervision and regulation, and legal traditions. Limited institutional convergence in European banking and the importance of national characteristics, among other factors, are considered to be responsible for these results. Differences in EU banking sectors are more likely to manifest in performance heterogeneities (profitability and efficiency) across banks; moreover empirical evidence suggest that legal tradition, accounting conventions, regulatory structures property rights, culture and religion can explain the cross-border variations in financial development and economic growth (Beck and Levine, 2004; Beck et al. 2005; La Porta et al. 1997; Levine, 2003; Levine et al., 2000; Stulz and Williamson, 2003; Barros et al., 2007).

Despite the fact that there were other severe and large-scale crises, from which the appropriate lessons weren't drawn, maybe the unrecorded size of the actual turmoil is a warning sign, for both decision makers and financial system's actors, to prevent future imbalances and to establish a proper strategy to address several risks. In this case, it was noted an important principle that must be taken into consideration in the financial system, namely: the principle of prudence (see Grant, 2012). In this respect, in order to restrain the vulnerabilities and risks that the financial systems faces, it was adopted a set of measures, by monetary and governmental authorities, aiming an economic, fiscal and legislative consolidation of the whole system.

III. Particularities of the financial system in the selected CEE countries

The recent international financial crisis that has degenerated into a sovereign debt crisis has shaken the entire foundation of the financial system. In this study the methodology used was referring to a comparative analysis of the financial systems taken into consideration. The sample chosen is formed of seven Central and Eastern European Countries, namely Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Poland and Romania. The period studied is 2008-2013, making reference to the impact of the subprime crisis and the sovereign debt crisis. The source of the data was International Monetary Fund statistics and the dataset used was referring to the FSI indicators and Z score.

The implications of the crisis were felt among all countries, and all sectors of the economy, but the strongest repercussions were observed in the emerging economies, and in the banking sphere.

More specifically, in the *banking system*, it was observed a deterioration of bank profitability and efficiency indicators, an increase in the ratio of nonperforming loans, a severe reduction of bank lending, and a deep orientation towards foreign currency lending.

In the current analysis it was performed both qualitative and quantitative analysis of the soundness indicators of the banking systems in CEE countries, so there were chosen several core soundness indicators promoted by IMF.

First of all, in the case of capital adequacy rate, it was observed a downward trend in the period 2008-2011, and a slightly recovery in the last two years, but the situation is still considered as being robust (see Table No.1).The average value of the capital adequacy rate for the countries analysed, during 2008-2013 was of 14.61%.

Credit risk, seen as a significant pillar in the management of a credit institution, can be estimated through asset quality; thus the main indicators used to assess this aspect are the ratio of nonperforming loans and the sectorial distribution of loans weighted by total loans.

In the period 2010-2011, the risks that threatened the financial stability have increased considerably in the context of worsening the sovereign debt crisis and intensification of the negative effects manifested on the banking sector; therefore, due to various reasons, it was also observed an inability to honour properly the debt service, which lead to an increase in the level of nonperforming loans. In this case, in 2013, in the top of the countries studied there were Romania (20.71%), Bulgaria (16.88%) and Hungary (16.86%). The average of this indicator in the European Union was about 25.88% for the period 2008-2012, and the deviations from the average being mostly in Hungary, Lithuania and Latvia. In this respect, the maximum value of this indicator was registered in 2010 in Lithuania (24.17%)**,** and the lowest was registered in 2008 in Latvia (2.10%) (seeTable No.1).

In the case of sectorial distribution of loans, in the countries studied, it can observed that a major importance is given to the loans granted to residents, averaging 91.66%, where the major contribution is given by the loans granted to nonfinancial corporations. These loans are considered to be the "engine of growth". A notable aspect was identified in the case of Lithuania, where the distribution of loans by credit institutions is formed only from loans granted to residents.

In order to assess in a realistic manner the situation of an institution, or of a system, it's necessary to analyse the operational results. In this case, the most expressive indicators calculated, are: return on average equity –ROE, and return on average assets –ROA, net interest margin and non-interest expenses, the last two being reported to the overall revenue.

As it can be seen in Table No.2, after the propagation of the international financial crisis, the banking sector has registered a descending trend, and, in some cases, the profitability and efficiency indicators have fallen into a negative territory. In the top of the countries analysed, the most sudden collapse of the profitability was registered in 2009, in Latvia and Lithuania, the situation being propagated in 2010 but at a slower pace (see Figure No.1). The average value for our sample in the period 2008-2013 was of 7.59, noticing a timid recovery, in 2013, in the case of Hungary and Romania. These results were determined by the following: a fragile economic environment, a strong aversion of the public towards the banking system, and severe measure taken by monetary and governmental authorities. The leverage effects, in the countries studied, suggest that there were committed supplementary resources in an advantageous manner, so the economic return is still higher than the cost of new resources.

Following, the issue of liquidity is approached. The revival of liquidity indicators in the last period was determined by the measured imposed by the central banks to the commercial credit institutions. In 2013, the highest growth rate of the liquidity ratio was observed in the case of Poland, with a value of 9.91%, whereas the lowest value was registered in the case of Hungary, with a value of -6.04%. The average growth rate for the sample analysed, in 2013, was of 1.55%, while in 2012, the growth rate was of 4.47% (see Figure No. 2).

In the current environment, the sensitivity analysis of the financial system has a significant importance , in this respect evaluating the net open position in foreign exchange to capital (see Table No. 3).An important step in the process of counter risks in the international financial framework was taken by the G20 group, through the adoption of an integrated set of policy measures dedicated to systemically important financial institutions. This kind of measures is a necessary step to reduce the likelihood and severity of financial instability, thus reducing the sensitivity levels of credit institutions in the international level.

In order to identify a general level of risk in the banking system, the Z score was chosen, which indicates the probability of failure of an institution, being calculated as the sum of capital adequacy rate and the return on assets, over the dispersion of the return on assets. The highest value of this indicator suggests the solidity of an institution, so this value can be either from high revenues or supplementary capital, indicating a high level of financial soundness (see Table No. 3). Regarding the countries analysed, in 2013, the highest value was registered in the case of Czech Republic, and the lowest value was observed in the case of Latvia.

With respect to the other components of the financial system, there was observed a deterioration

of the confidence in the whole economic environment, being aggravated by the uncertainty and accelerated tensions on the capital market.
From the perspective of *insurance companies* it can be indicated that there may have been implications for economic activity, pointing out negative effects on growth of life insurance and general insurance. However, despite the adverse developments, insurance companies have obtained high yield of interest on deposits and investments in government securities. In this context, it stands as the main risks relating to sensitive economic environment, but also the increasing prices on auto insurance.
In the case of *pension funds*, it can be indicated that there was a lower growth rate of contributions but the implications in *nonfinancial institutions* were deeper. Thus, their ability to continue work in good conditions is constrained by economic contraction issues. It is also noted the orientation towards investments in fixed income instruments and a decreased risk.
It was perceived deterioration in the loan portfolio, restricting access to finance and reduce credit demand.
Capital market was affected in the same proportion, by the crisis, and although in early 2010 there was a trend to improve investor's confidence, it has deteriorated in recent years due to the concerns regarding the sovereign debt crisis. Within this context it was registered an aversion on the major international stock exchange indices, observing historical values in the most affected years(see Figure No. 3).
Monetary authorities have intervened to support the financial system through a set of measures that can be grouped differently. It has been noticed *ad hoc measures* adopted for individual credit institutions, and *complex schemes*, applied when the international financial crisis intensified.
At the same framework it has been noticed the measures taken by monetary authorities and the government.
Under *government measures*, there are observed as the main courses of action the guarantee of bank deposits, bonds, bank recapitalization, delimitation of the so-called "Bad Banks" and the nationalization of financial institutions (see Table No. 4). The first step involves increasing the level of bank guarantees from 20.000 EUR to 100.000 EUR, wishing to emphasize the solidity of the banking system. The recapitalization was used to inject funds into the financial system, primarily for the institutions where additional capital was required for the smooth running of the business. To absorb losses in the system the delimitation of credit institutions which registered losses and delays in payment obligations was used , known as "Bad Banks". In the latter method, nationalization was turned into a low rate, as implied transfer of state-owned financial institutions to realign their primary objective.
The *measures* adopted by *monetary authoritise have a significant importance*, which have mainly used monetary policy instruments, acting to decrease progressively monetary policy rate and reserve requirements. Also, to ensure financial stability, they have imposed regulations to ensure a certain level of liquidity and solvency.
Also, at European level there were noted other remedies, to counteract the negative effects of global financial crisis, namely the European Economic Recovery Plan (2008), Initiative Vienna (2009, 2012), College of Banking Supervision (2009), Agreement Basel III (2010) and macro-prudential supervision framework.
With a major impact on financial systems studied, it was noted the *Vienna Initiative*, which has as main concern the analysis of the problems of nonperforming bank loans, the loans in foreign currency, establishing a minimum level of capital adequacy.
Basel III Agreement plays a fundamental role plays, which involved the establishment of new regulations on the capital adequacy and liquidity, marking response to the deficiencies caused by the global financial crisis. This involved the establishment of improved commercial settlement arrangements, arrangements to prevent bank failures and the ensuring of greater transparency on the management of financial institutions.
Performance of the financial system is directly dependent on the nature of the social system, development level of each state and the economic policies promoted. Thus, Central and South European countries have acted to achieve a set of reforms to adapt the financial system to the standards promoted by developed countries.

IV. Conclusions

This paper aimed to highlight the main implications of the international economic crisis on the financial system in the countries of Central and Eastern Europe, namely Bulgaria, Czech Republic, Latvia, Lithuania, Poland, Romania and Hungary, stressing the negative effects, manifested mainly on the banking sector, and also the measures taken by public authorities.
Compared to previous studies the current one is different in the following ways: it analyses the financial systems from seven countries in Central and Eastern Europe; and it focuses on a more recent period, namely 2008-2013 outlining the major measures taken by monetary authorities to counteract the negative effects of the recent crises.
The results of this analysis suggest that, despite all the progress of the countries studied due to transition to a market economy, financial crisis manifested in each country, being closely related to the specific vulnerabilities of different economies.

The most affected component of the financial system was the banking sector, observing a severe downtrend of bank lending, profitability indicators, and capital adequacy indicators, among others. For instance, credit risk, which is a vital pillar of a financial institution, has aggravated in the last years. In this respect, from the countries studied, the highest value of nonperforming loans was registered in 2013, in Romania (20.71%), Bulgaria (16.88%) and Hungary (16.86%).The average of this indicator in the European Union was about 25.88% for the period 2008-2012, and the deviations from the average being mostly in Hungary, Lithuania and Latvia. Moreover, from another perspective, liquidity risk is another issue intensely addressed by monetary authorities. In 2013, the highest growth rate of the liquidity ratio was observed in the case of Poland, with a value of 9.91%, whereas the lowest value was registered in the case of Hungary, with a value of -6.04%. The average growth rate for the sample analysed, in 2013, was of 1.55%, while in 2012, the growth rate was of 4.47%.

Thus, to support the financial system and counteract the adverse effects of economic crisis, authorities have been involved through various measures aiming at restoring the confidence in the financial system, strengthening and enhancing its capacity to face adverse international developments.

Despite the insights that this paper brings, it also has some limits, therefore future research directions are following a well-defined path, targeting an extension of the time period studied and of the sample analysed.

Acknowledgements

This work was supported by the project “Excellence academic routes in the doctoral and postdoctoral research – READ” co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007-2013, contract no. POSDRU/159/1.5/S/137926.

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Appendices

Table No. 1
*The evolution of capital adequacy ratio and nonperforming loans ratio, in the countries examined,
during 2008-2012 (%)*

	Regulatory capital to RWA						***Nonperforming loans to total gross loans***					
	2008	***2009***	***2010***	***2011***	***2012***	***2013***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***
BG	14.9	17.0	17.4	17.5	16.6	16.9	2.5	6.4	11.9	14.9	16.9	16.9
CZ	11.7	14.1	14.9	15.4	15.7	16.3	3.2	5.2	5.3	5.5	5.1	5.2
LV	11.1	14.6	13.9	15.3	16.8	17.6	3.6	16.4	15.9	15.3	16.8	7.5
LT	11.6	14.2	13.9	14.2	15.2	17.4	4.6	19.3	24.2	21.2	18.6	13.1
PL	11.2	13.3	13.8	13.5	14.1	15.5	4.5	7.6	4.7	4.8	5.1	5.1
RO	13.8	14.7	14.7	14.4	14.7	14.7	6.5	15.3	10.7	13.6	17.3	20.7
HU	12.3	12.9	13.9	14.1	15.1	16.9	3.0	6.7	8.9	12.2	16.2	16.9

Note. RWA stands for risk weighted assets and ROE for return on equity.
*Source.*Own processing after official statistics of IMF.

Table No. 2
The evolution of profitability indicators in the countries examined during 2008-2013(%)

	ROA						***ROE***					
	2008	***2009***	***2010***	***2011***	***2012***	***2013***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***
BG	2.1	1.1	0.8	0.6	0.8	0.6	19.4	9.8	7.8	5.7	7.9	5.7
CZ	1.3	1.3	1.4	1.3	1.4	1.2	24.4	23.8	22.2	20.2	20.9	17.6
LV	0.2	-3.9	-1.8	0.5	2.5	0.9	2.9	-50.6	-19.7	4.7	22.2	8.7
LT	1.1	-2.1	-0.5	1.2	0.8	0.7	13.8	-27.2	-6.5	12.9	7.1	6.3
PL	1.5	0.9	0.9	1.2	1.2	1.1	20.7	13.2	12.1	15.4	14.5	12.69
RO	1.6	0.3	0.01	0.03	0.01	0.5	17.1	2.9	0.2	-0.1	-0.3	4.1
HU	1.2	0.9	0.6	0.3	0.3	0.5	16.4	11.5	7.3	3.2	2.9	5.2

*Source.*Own processing after official statistics of IMF.

Table No. 3
The evolution of net open position and Z score in the countries examined, during 2008-2013(%)

	Net open position in foreign exchange to capital						***Z score***					
	2008	***2009***	***2010***	***2011***	***2012***	***2013***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***
BG	0.2	0.01	n.a.	n.a.	n.a.	n.a.	15.5	16.5	16.6	16.5	15.8	16.0
CZ	2.4	0.4	0.3	-0.1	-2.1	3.1	223.1	248.9	281.5	286.6	293.5	302.2
LV	8.5	12.1	8.3	10.5	9.7	7.2	5.0	4.3	5.3	6.9	8.5	8.2
LT	0.9	0.9	0.7	0.7	0.5	0.6	9.9	7.7	10.5	12.1	12.6	14.2
PL	-0.1	2.4	0.3	-0.2	0.1	-0.1	56.2	58.5	65.2	64.9	67.4	73.5
RO	1.6	2.3	-0.4	-3.8	-3.7	0.7	25.3	24.7	24.3	23.7	24.3	25.1
HU	15.3	18.4	14.8	20.2	19.3	18.3	37.8	40.6	40.6	40.1	42.9	49.1

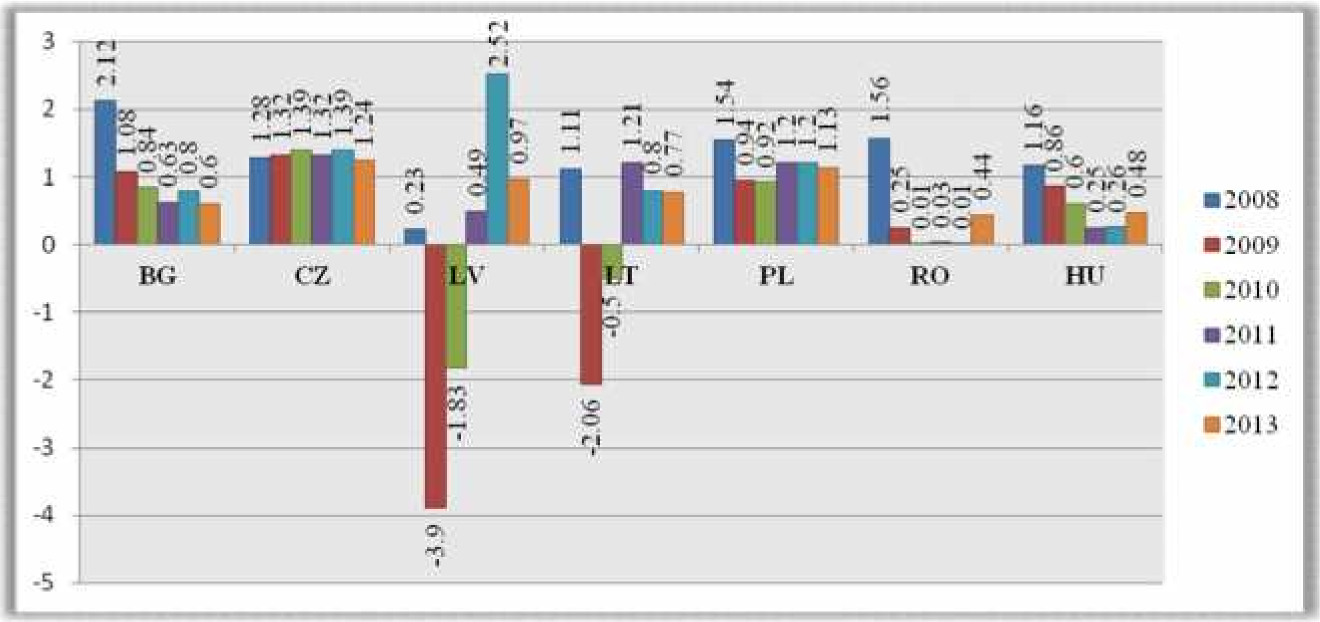
*Source.*Own processing after official statistics of IMF.

Table No. 4
Governmental measures adopted in the countries surveyed,during2007-2013

	Guarantee schemes	***Recapitalization schemes***	***Mixed schemed***	***Financial institutions affected***	***Deposit guarantee (EUR)***
BG	-	-	-	-	100.000
CZ	-	-	-	-	100.000
HU	-	-	x	-	100.000
LV	x	-	-	2	100.000
LT	-	-	x	-	100.000
PL	x	x	-	-	100.000
RO	-	-	-	-	100.000

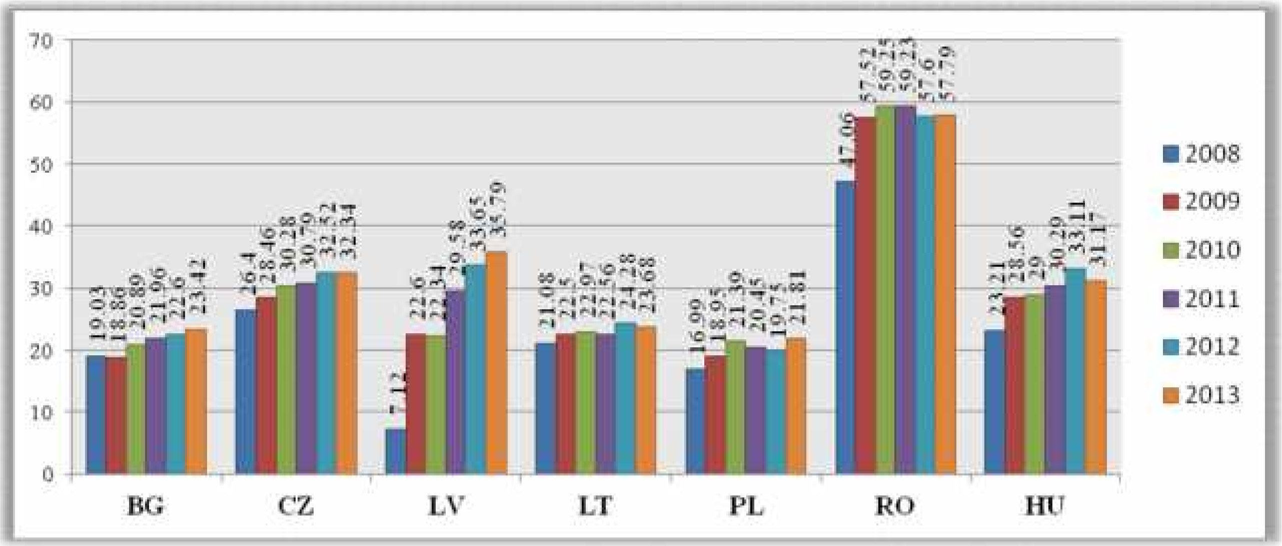
*Source.*Centralized date after Lannoo,K., and Napoli C.(2010). Bank State Aid In The Financial Crisis Level Playing Field-or fragmentation?.

Figure No.1 The evolution of ROA in the countries analysed, during 2008-2013



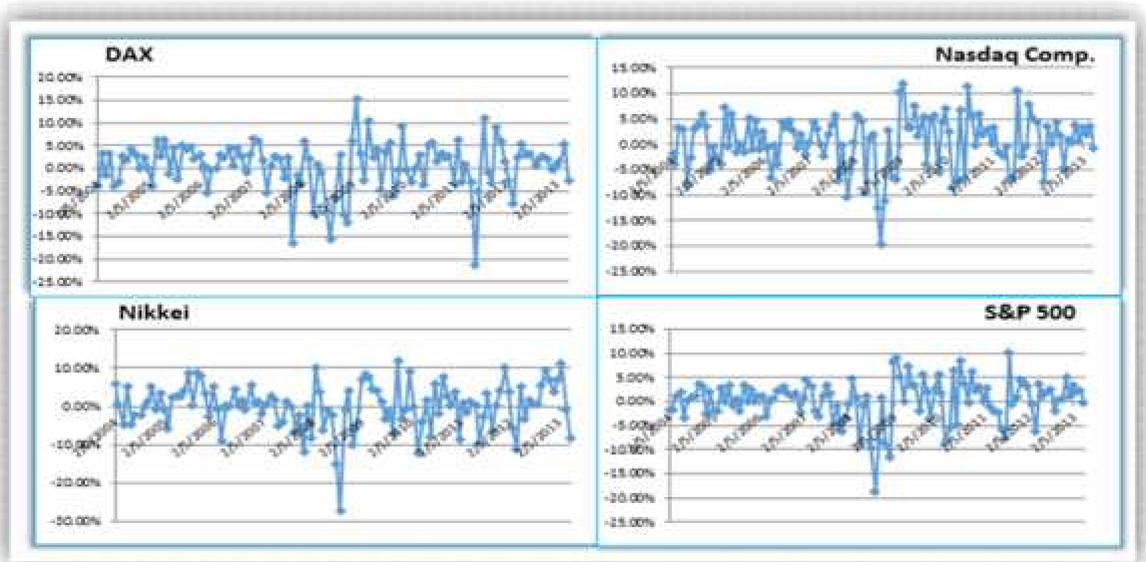
*Source.*Own processing after official statistics of IMF.

Figure No.2 The evolution of liquidity ratio in the countries analysed, during 2008-2013



*Source.*Own processing after official statistics of IMF.

Figure No. 3The evolution of major stock price indices, during 2000-2013



Source. Own processing after reports of stock exchanges