

A COMPARATIVE ANALYSIS ON BANKING SYSTEMS' PROFITABILITY BETWEEN WESTERN EUROPEAN AND CEE COUNTRIES

Bogdan Florin FILIP

Alexandru Ioan Cuza University of Iași, Faculty of Economics and Business

Administration

Iași, Romania

bogdan.filip@feaa.uaic.ro

Abstract: *The paper is focused on analysing comparatively the banking systems' profitability and, especially, its determinants in two major groups of European countries, namely the western ones and the central and eastern ones, considering that they have significant different social and economic conditions which may influence banking activity. Starting from the scientific literature, are identified bank-specific, industry specific and macroeconomic determinants of banking profitability, but it is also taken into consideration the manifestation of the economic and financial crisis as an important supplementary determinant, while banking profitability is proxied by the indicators ROAA and ROAE. Using econometric methods to process the data for these groups, each of 12 countries, for 2000-2011, we concluded that for both groups, economic growth is enhancing banking systems' profitability, while credit risk and crisis are affecting it significantly. Beside these, in western European countries, banking profitability is significantly affected by capital adequacy and inflation, but positively influenced by liquidity, while in CEE countries it is strongly affected by unemployment and positively influenced by activity mix. Thus, we consider that banks in Western Europe should especially take actions for improving their capital adequacy and limit the credit risk, while in CEE countries banks should focus on reducing credit risk and the government should take actions against unemployment.*

Keywords: *ROAA; ROAE; bank-specific determinants; industry-specific determinants; macroeconomic determinants; crisis*

1. INTRODUCTION

One of the most important prerequisite for ensuring the proper functioning of the economy of each country is undoubtedly the performance of its banking system, which must be capable to fulfil its major role of financial intermediary and sustain the economic growth, by making the unused capital available for the active business and by facilitating the movements of capital within the economy. At the same time, the implication of the banks in such activities is very much depending on the profitability that may be obtained by them, which is depending, in turn, by several determinants, including by the economic and social climate, specific to that country, or valid globally, such as the manifestation of the financial crisis.

In this framework, our paper aims to investigate the main drivers of the banking systems' profitability in Europe, by taking into account the differences of economic and social development between the two major parts of Europe, the western one and the central and eastern other one. This analysis will allow us so to draw some conclusions and recommendations, for the countries in each of the mentioned groups, in order to ensure a higher efficiency of the banking systems, as basis for their economic development.

2. LITERATURE REVIEW

Studying the scientific literature one might notice that the interdependencies manifested between the evolution of the economy, on the one hand, and the profitability of the banking business, on the other hand, including the transmission of the shocks between the economy and the banking system and vice versa, are concerning more and more researchers, encouraging them to investigate which are the main determinants of banking profitability, and to propose specific actions in order to ensure a better performance of the banking systems and of the economy. In this regard there can be mentioned some studies [4; 8; 10; 18] that emphasize the major role of banks in the overall development of society, including in supporting long term economic growth [12] and plead for the necessity of ensuring a high performance of banking systems and for finding out the main determinants of it.

Some papers are investigating the determinants of the profitability of the banking activity at the level of a single country, such as USA [10], Switzerland [5], Tunisia [15], Greece [2;8], Philippines [18], Spain [20], while others are considering groups of countries [1; 5; 7; 13; 17]. Moreover, in recent papers [5; 8; 15; 6], there is manifested a growing interest in analysing the effects of the global financial crisis manifestation transmitted on banking systems' profitability. We notice also in literature, and we agree along with other authors, that banking profitability can be best synthesized by indicators like return on average assets [1; 5; 7; 8] or return on average equity [1; 5; 19; 20].

In most of the cases, the authors highlight in their papers that banks' profitability is influenced by a sum of determinants, which can be grouped in internal ones (bank size, capital adequacy, liquidity risk, expenses management, activity mix, credit risk, etc.), industry-specific ones (e.g., concentration etc.) and macroeconomic ones (as GDP growth, inflation etc.). Yet, in our opinion and based on the late experience given by the manifestation of the recent global financial crisis, it should be taken into consideration as an important determinant also the specific economic and social background on which banks are developing their activities.

Bank size can play a significant role in determining bank's profitability through the potential scale economies or diseconomies it might generate but, as literature shows in different empirical studies, its impact on banks' profitability appears to be quite ambiguous. Even some authors observed a positive conditioning relationship between bank size and banking profitability [3; 9; 13], other ones have noted a reverse influence [2; 14; 17; 18]. Capital adequacy is considered, usually, also as a determinant of banks' profitability, although in this case too, different studies reveal different views on the way it influences banks' profitability. Some authors found a positive effect of this factor, due to the fact that a high level of capitalization implies a decrease of the cost of capital [1; 9; 13], but other authors found adverse effects as a result of a lower risk taken by banks leading to lower profits [15; 18].

Liquidity risk which may come from banks' inability to maintain a normal equilibrium between assets and liabilities, is likely to affect seriously the banks' stability

and profitability. Thus, most authors [1; 14; 18] consider that providing liquidity at a sufficient level becomes a positive determinant of banking profitability.

Expenses management, which can be proxied by the overhead costs to total assets ratio, is also expected to have an influence on banking profitability. Thus, in literature is mentioned the existence of a negative determination relationship between the proportion of the costs and banks profitability [17]. Yet, it depends also on how reasonable the bank dimensions its costs, because sometimes it has to pay more money (for example in the process of recovering some overdue loans) but so it prevents bigger losses because of the need of provisions. In this regard, some empirical studies [7], showed in some cases a positive insignificant effect on profitability.

Banks' profit results mainly from its lending activity, but is determined also by banks' capability to generate income from other activities. Thus, the diversification of banks' activity can be considered an important factor with positive impact on banks' profitability [5; 17]. Credit risk, measured many times through the ratio of non-performing loans, determines failures in getting the expected revenues, but also high provision expenses, which have a major negative impact on the performance of banks [6; 12; 20].

Banking system's profitability is also linked by the economy's performance, mainly by the level and rhythm of development of the economy, and several empirical studies [3; 5; 14] have confirmed the significant positive relationship between economic growth and the profitability of the banking activity. Another macroeconomic determinant of banks' profitability is inflation, which, usually can have a negative impact, by affecting the repayment capacity of borrowers and thus causing losses because of the delays or lack of loan repayments [11; 16; 17]. However, some authors [13; 14] found a positive relationship between inflation and banks performance, sustaining that only the lack of anticipation of inflation causes negative effects.

Even very rarely taken into consideration in literature as determinant of banks' profitability, we consider unemployment to be an important factor with impact on it. Thus, its growth slows down the economic development and causes some borrowers to lose their repayment capacity and generates effects, both in terms of defaulted loans and in the reduction of banks operations, which lead for the banks either to losses or to the decrease of operational incomes. We also believe that bank profitability is subject to macroeconomic developments especially to the manifestation of major negative phenomena such as financial and economic crisis, which affect the economic activity, in general, and implicitly the operation and the performance of banking systems.

In addition, we think that it should be of high interest to analyse the impact of the various determinants on the banking systems' profitability, taking into account the different conditions in the European countries, out of which some of them, the western ones, are considered to be more developed than the central and eastern European ones, most of them considered as emerging markets. Thus, by comparing the results of the analysis in the two cases, we expect to find out important conclusions regarding the similitudes and the differences of the impact of the considered determinants, as basis for suggesting adequate measures to be taken in order to ensure a better performance of the European countries' banking systems.

3. DATA AND METHODOLOGY

Considering that there are significant differences across the countries in Europe, our empirical research is focused on making a comparative analysis on the profitability of the banking systems between a group of 12 western European countries and another group of also 12 countries from Central and Eastern Europe (CEE). We aim especially to find out which are the main determinants of profitability within these groups of countries and to identify possible conclusions and actions required to improve the performance of the banking systems.

The Western European countries considered in analysis are Austria, Belgium, Denmark, France, Germany, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom, while the group of CEE countries is composed by Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Slovak Republic and Slovenia. We use annual data of banking systems from all these countries taken from international databases Global Financial Development Databank (GFDD) of World Bank, World Bank Databank and Financial Soundness Indicators (FSI) of the IMF, during 2000-2011.

The banking systems' profitability will be proxied through the ROAA and ROAE indicators, considered as dependent variables in the econometric analysis. On the other hand, in accordance with the literature mentioned before, we consider in analysis as determinants of profitability and independent variables the indicators listed in Table 1, where we included their expected effect.

As the table is revealing we considered first of all three categories of impact factors on banks 'profitability: a) internal (bank-specific) – bank size, capital adequacy, liquidity, expenses management, activity mix, credit risk; b) industry-specific – e.g. concentration; c) macroeconomic - GDP growth rate, inflation, unemployment. We will take into account in assessing banks' profitability also the global economic environment, because in the last part of the period under research it was marked by the financial crisis manifestation and we expect effects of it on the profitability. This is why we introduce in analysis the dummy variable "crisis" in order to estimate a potential impact of the crisis on banking systems' profitability.

Table 1. Impact factors on banking system profitability – independent variables

| Independent variable/ Determinant | Indicator name | Indicator symbol | Expected influence (+/-) | Source |
|--|---------------------------|---------------------|--------------------------------|-----------------------------|
| <i>Internal (bank specific) determinants</i> | | | | |
| Bank size | Total Assets to GDP ratio | A_GDP | +/- | World Bank GFDD database |

| | | | | |
|--|--|--------|-----|--------------------------|
| Capital adequacy | Regulatory Capital to Risk Weighted Assets Ratio (%) | C_A | +/- | IMF – GFSR- FSI Tables |
| Liquidity | Liquid assets to deposits and short term funding (%) | LA_D | + | World Bank GFDD database |
| Expenses Management | Bank overheads costs to total assets (%) | OC_A | -/+ | World Bank GFDD database |
| Activity Mix | Non-interest income to total income (%) | NI_TI | + | World Bank GFDD database |
| Credit Risk | Non-performing loans to total loans ratio (%) | NPLR | - | World Bank GFDD database |
| <i>Industry specific determinants (external)</i> | | | | |
| Concentration | Bank concentration | BKC | +/- | World Bank GFDD database |
| <i>Macroeconomic determinants (external)</i> | | | | |
| Economic growth | GDP growth rate (%) | GDPGR | + | World Bank Databank |
| Inflation | Inflation rate - CPI (%) | INFR | +/- | World Bank Databank |
| Unemployment | Unemployment rate variation (%) | ΔUNEM | - | World Bank Databank |
| <i>Specific economic environment determinants (external)</i> | | | | |
| crisis | crisis | crisis | - | dummy |

The development of the analysis, on the mentioned coordinates, concerns the processing of panel of data for the considered countries by using Pearson correlations, respectively, by building two econometric models, for each of the two dependent variables, and by testing them using the Panel Least Squares method.

4. RESULTS AND COMMENTS

We use Pearson correlations in the first part of the analysis to identify the existence of the linkages between the dependent variables ROAA, respectively ROAE, with the considered determinants. Thus, after processing the data for 2000-2011 period, the resulting correlations between ROAA and the considered determinants, for each of the groups of countries which are analysed, are those reflected in Table 2.

Table 2. Correlations and probabilities of ROAA with the other variables for Western European countries and CEE countries

| <i>Indicator</i> | <i>ROAA - West</i> | <i>ROAA - CEE</i> |
|------------------|--------------------|-------------------|
| A_GDP | -0.130292 | -0.197583** |
| | 0.1475 | 0.0351 |
| C_A | -0.250325*** | 0.017107 |
| | 0.0049 | 0.8566 |
| LA_D | 0.022998 | 0.178102* |
| | 0.7991 | 0.0580 |
| OC_A | 0.222598** | 0.055028 |
| | 0.0126 | 0.5609 |
| NI_TI | 0.036949 | -0.018112 |
| | 0.6825 | 0.8483 |
| NPLR | -0.400705*** | -0.393468*** |
| | 0.0000 | 0.0000 |
| BKC | -0.004670 | -0.107018 |
| | 0.9588 | 0.2571 |
| GDPGR | 0.387561*** | 0.524126*** |
| | 0.0000 | 0.0000 |
| INFR | -0.037940 | 0.323322*** |
| | 0.6744 | 0.0005 |
| ΔUNEM | -0.100428 | -0.427400*** |
| | 0.2651 | 0.0000 |
| CRISIS | -0.539200*** | -0.278907*** |

0.0000

0.0027

***, **, * - denotes significance at 1%, 5%, respectively 10% level

The results from Table 2 show that for both of the groups, ROAA is very strongly positively correlated with economic growth and negatively correlated with the manifestation of the credit risk and of the financial crisis. Yet, specifically, in western European banking systems ROAA appears also negatively correlated with their capital adequacy and positively correlated with their expenses management, while in the banking systems from CEE countries we notice for ROAA a very significant positive correlation with inflation and a negative one with the unemployment rate variation. Also in the case of the latter group of countries we observe a quite significant positive correlation between ROAA and liquidity and a significant negative correlation with bank size. At the same time, the other determinants seem not to be significantly correlated with ROAA.

We continue the analysis by using ROAE as proxy for the banking systems' profitability and looking for establishing its correlations with the considered determinants, for the two groups of countries and on the same period, which leads us to the results in Table 3.

Table 3. Correlations and probabilities of ROAE with the other variables for Western European countries and CEE countries

| <i>Indicator</i> | <i>ROAE - West</i> | <i>ROAE - CEE</i> |
|------------------|--------------------|-------------------|
| A_GDP | -0.205746** | -0.124913 |
| | 0.0213 | 0.1854 |
| C_A | -0.109727 | -0.247573*** |
| | 0.2232 | 0.0079 |
| LA_D | 0.120002 | 0.165862* |
| | 0.1825 | 0.0778 |
| OC_A | 0.012991 | 0.069242 |
| | 0.8857 | 0.4641 |
| NI_TI | 0.113939 | 0.213560** |
| | 0.2058 | 0.0225 |
| NPLR | -0.441436*** | -0.481708*** |

| | | |
|--------|--------------|--------------|
| | 0.0000 | 0.0000 |
| BKC | -0.109575 | -0.069985 |
| | 0.2238 | 0.4594 |
| GDPGR | 0.429386*** | 0.631998*** |
| | 0.0000 | 0.0000 |
| INFR | -0.124802 | 0.177959* |
| | 0.1655 | 0.0582 |
| ΔUNEM | -0.043877 | -0.537779*** |
| | 0.6271 | 0.0000 |
| CRISIS | -0.547728*** | -0.434183*** |
| | 0.0000 | 0.0000 |

***, **, * - denotes significance at 1%, 5%, respectively 10% level

Analysing Table 3 we observe first that data confirm one more time that for both groups of countries, the banking systems' profitability, this time proxied by ROAE, is very strongly positively correlated with economic growth and negatively correlated with the manifestation of the credit risk and of the financial crisis. Secondly, beside this correlations, data show that in the western European banking systems ROAE is quite significant negatively correlated with banks size and insignificantly correlated with the remaining variables. On the other hand, in the banking systems from CEE countries, it results that ROAE is also very significantly and negatively correlated with the unemployment rate variation and with capital adequacy and less significantly and positively correlated with liquidity, activity mix and inflation.

Based on the previous results, we consider that the analysis of the action of the factors with impact on banking systems' profitability in the two groups of countries which were analysed, can be achieved by building and testing of econometric regression models in which ROAA, respectively ROAE, are dependent variables. Thus, in the next stage of the analysis, using Panel Least Squares method, we have built an econometric model whose regression equation is as follows (1):

$$y_{jt} = c + \sum_i \beta_{1ijt} X_{ijt} + \beta_{2jt} X_{cjt} + \sum_m \beta_{3mjt} X_{mjt} + \beta_{4jt} crisis + \varepsilon \quad (1)$$

where, j represents the specific country, t stands for the year, y means ROAA, X_i are the internal determinants, X_c is the industry specific determinant, X_m are the macroeconomic (external) determinants, β are the coefficients of the determinants, ε is error term and crisis is the dummy variable for capturing the crisis manifestation.

By testing the above proposed model for estimating the impact of the determinants on ROAA, during 2000-2011, in the case of the western European countries, respectively of the CEE countries, we obtained the results presented in Table 4:

Table 4. Results of testing the proposed model for ROAA for Western European, respectively CEE countries

| Country Group: | Western European | | CEE | |
|--------------------------|------------------|--------|-------------|--------|
| Periods included: | 11 | | 11 | |
| Cross-sections included: | 12 | | 12 | |
| Variable | Coefficient | Prob. | Coefficient | Prob. |
| A_GDP | 0.001419 | 0.1307 | 0.001264 | 0.7841 |
| C_A | -0.040835 | 0.0103 | 0.063884 | 0.0030 |
| LA_D | 0.003411 | 0.1163 | -0.005042 | 0.4927 |
| OC_A | 0.131945 | 0.0100 | 0.028738 | 0.6969 |
| NI_TI | -0.004364 | 0.1649 | -0.001373 | 0.8962 |
| NPLR | -0.060121 | 0.0002 | -0.051217 | 0.0016 |
| BKC | -0.002457 | 0.2000 | -0.010267 | 0.0754 |
| GDPGR | 0.028200 | 0.0810 | 0.070638 | 0.0038 |
| INFR | -0.040412 | 0.1872 | 0.028057 | 0.1016 |
| Δ UNEM | 0.025057 | 0.4092 | -0.101596 | 0.0150 |
| CRISIS | -0.265230 | 0.0023 | -0.086682 | 0.6868 |
| C | 1.138086 | 0.0078 | 0.986105 | 0.1503 |
| R-squared | 0.472217 | | 0.469928 | |
| Adjusted R-squared | 0.420840 | | 0.412764 | |
| F-statistic | 9.191187 | | 8.220615 | |
| Prob(F-statistic) | 0.000000 | | 0.000000 | |

According to Table 4 it results a good degree of viability of the proposed model after testing it both in the case of western European countries (R-squared = 0.4722, Adjusted R-squared = 0.4208) and in CEE countries case (R-squared = 0.4699, Adjusted R-squared = 0.4128), which expresses the fact that the dependent variable ROAA is relevantly determined by the factors taken into consideration.

For both groups of countries we note the statistically significant positive impact of economic growth and, at the same time, the significant negative impact of the NPLs ratio on banking profitability proxied by ROAA. On the other hand, crisis appears to have a significant negative impact on ROAA, only in case of the western European countries. In the case of the banking systems of western European countries we remark also that the profitability is very much negatively influenced especially by the manifestation of the financial crisis and by the capital adequacy, while the expenses management has an important positive effect on it.

Comparatively, in CEE countries, banking profitability, proxied by ROAA, is significantly affected by the unemployment rate variation and by banks concentration', while capital adequacy appears as a favourable determinant of it. Moreover, other determinants, including, surprisingly, the financial crisis, seem not to have significant effects on banks' ROAA. The profitability of banking systems in the two groups of countries, can be analysed also by taking ROAE as dependent variable and therefore we built the following equation (2):

$$z_{jt} = c + \sum_i \beta_{1ijt} X_{ijt} + \beta_{2jt} X_{cjt} + \sum_m \beta_{3mjt} X_{mjt} + \beta_{4jt} crisis + \varepsilon (2),$$

where z represents ROAE, the other variables being those from previous model.

Testing the proposed regression equation on the data taken into consideration has led to the results in table 5.

Table 5. Results of testing the proposed model for ROAE for Western European, respectively CEE countries

| Country Group: | Western European | | CEE | |
|--------------------------|------------------|--------|-------------|--------|
| Periods included: | 11 | | 11 | |
| Cross-sections included: | 12 | | 12 | |
| Variable | Coefficient | Prob. | Coefficient | Prob. |
| A_GDP | -0.000639 | 0.9752 | 0.078636 | 0.0638 |
| C_A | -0.586095 | 0.0916 | -0.029147 | 0.8795 |
| LA_D | 0.083515 | 0.0811 | 0.056292 | 0.4012 |
| OC_A | -0.740691 | 0.5051 | 0.219467 | 0.7442 |

| | | | | |
|--------------------|-----------|--------|-----------|--------|
| NI_TI | -0.077850 | 0.2597 | 0.161952 | 0.0938 |
| NPLR | -1.142821 | 0.0013 | -0.402850 | 0.0063 |
| BKC | -0.087417 | 0.0394 | -0.039513 | 0.4501 |
| GDPGR | 0.936874 | 0.0090 | 0.652408 | 0.0034 |
| INFR | -1.548867 | 0.0227 | 0.269327 | 0.0850 |
| ΔUNEM | 1.400278 | 0.0377 | -1.317363 | 0.0006 |
| CRISIS | -6.956676 | 0.0003 | -3.571295 | 0.0706 |
| C | 31.75652 | 0.0008 | 3.129519 | 0.6150 |
| R-squared | 0.507124 | | 0.595820 | |
| Adjusted R-squared | 0.459145 | | 0.552231 | |
| F-statistic | 10.56969 | | 13.66932 | |
| Prob(F-statistic) | 0.000000 | | 0.000000 | |

Table 5 shows a good degree of viability of the proposed model after testing it both in the case of western European countries (R-squared = 0.5071, Adjusted R-squared = 0.4591) and in CEE countries case (R-squared = 0.5958, Adjusted R-squared = 0.5522). This fact confirms that the dependent variable ROAE is relevantly determined by the considered determinants, even stronger than in the case of using ROAA as proxy for banking profitability. It is remarkable in Table 5 that for both groups of countries there exists a statistically significant negative impacts of the crisis manifestation and of the NPLs ratio on banking profitability, proxied by ROAE, and, simultaneously, a significant positive impact of economic growth on it.

Yet, in the case of the banking systems of western European countries we observe also that on the profitability there are significant negative effects determined by capital adequacy, banks' concentration and especially inflation, while the expenses management has an important positive effect on it. On the other hand, in this case, there are also quite significant positive determination relationships driven by banks' liquidity and, surprisingly, by the unemployment rate variation. In comparison, in CEE countries, banking profitability, proxied by ROAE, is very significantly affected by the unemployment rate variation, while bank size, activity mix and inflation appears as quite significant favourable determinants of it.

5. CONCLUSIONS

Our paper makes analyses of the banking systems' profitability in Europe by comparing the situation in the western (developed) countries with the one in the Central and Eastern European (most of them emerging) countries, from the point of view of the most relevant determinants of profitability, which we was proxied by its most relevant indicators, namely ROAA and ROAE.

The analyses were developed on the banking systems' profitability of two groups of 12 countries each, from western, respectively central and eastern, Europe for the period 2000-2011, by studying the impact of internal determinants (e.g. bank size, capital adequacy, liquidity risk, expenses management, activity mix, credit risk), industry-specific and macroeconomic determinants (GDP growth, inflation, unemployment), but also of the financial crisis.

The analyses of ROAA and ROAE correlations with the other variables, show for both indicators and for both groups of countries significant negative relationships of banks' profitability with credit risk and crisis manifestation and a significant positive relationship with the external factor GDP growth. At the same time, only in the case of CEE countries, it appears that ROAA and ROAE are significantly and positively correlated with banks' liquidity and with inflation rate and negatively correlated with the unemployment rate variation.

Deepening the analysis on bank profitability in the two groups of European countries was carried out by building and testing regression equations, with ROAA and ROAE as dependent variables while the independent variables were represented by the other variables. Processing the panel data revealed, for both groups of countries, a significant positive impact of GDP growth and a significant negative impact of credit risk on both ROAA and ROAE. Moreover, crisis manifestation had a significant negative impact on ROAE for both groups and a significant negative impact on ROAA only in western countries.

We note also significant negative impacts on ROAA, given by capital adequacy in western countries and by bank concentration and unemployment in CEE countries, but also significant positive impacts of expenses management in western countries and by capital adequacy in CEE countries. In turn, ROAE in western European countries resulted to be significantly negatively influenced by capital adequacy, bank concentration and inflation and positively influenced by liquidity. On the other hand, ROAE in CEE countries is significantly affected by unemployment and positively influenced by activity mix, inflation and size.

Looking at all the results, we conclude first that for both groups of countries banking profitability is strongly enhanced by economic growth and also affected by credit risk and the manifestation of the economic and financial crisis. Beside these, profitability appears to be significantly affected in western European countries by the capital adequacy and inflation, but also positively influenced by liquidity. On the other hand, in CEE countries, banking systems' profitability is especially affected by the unemployment rate variation and positively influenced by activity mix.

We believe that there are needed further efforts for banks in western European countries to improve their capital adequacy level and to reduce credit risk, especially by preventing the deterioration of bank loan portfolio quality, but also by measures to diminish the existing non-performing loans. On the other hand, in CEE countries, banks should also focus on reducing credit risk and continue to increase their revenues from other activities than lending, but also the government should take measures for fighting against unemployment. We consider that such concerns may contribute to reducing the negative effects transmitted on banks' activity, determined by the manifestation on macro level of dangerous phenomena such as inflation and economic and financial crisis.

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