

STUDY REGARDING THE PERFORMANCE OF THE ROMANIAN BANKING SYSTEM

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Abstract

Bank performance is an indicator of the quality management and soundness of commercial banks. The systemic role of the commercial banks in the Romanian economy and their role of main creditor determine the supervisors to monitor their performance and their capacity to face the challenges. Taking into account that we are talking about a banking system which has not yet exceeded during turbulence generated by economic and financial crisis, the aim of this study is to identify and analyze the main determinants of bank performance, so any shocks that may impact on this indicator to be identified early and minimized. The financial authorities, in their attempt to avoid new bank failures, because of their negative impact on the entire financial system, have imposed new capital requirements in order to strengthen the banking system's capacity to absorb shocks. The most used indicators in order to measure the performance of the banking system are return on assets and return on equity. Taking into account this consideration the main objective of this study is to analyze the determinants that have a major impact on the banking system performance in an empirical and theoretical manner. To achieve this goal we used a quantitative method, the Pearson's coefficient. Into the model were involved data recorded by Romanian banking system in the period 2008-2013, processed by the publications of National Bank, the International Monetary Fund and the National Institute of Statistics. In the model of the correlation coefficient, the regression involved the following indicators: solvency, nonperforming loans as a percentage of total loans, gross domestic product and inflation. The results demonstrated that the factor that has the greatest impact on banking performance is the solvency ratio, followed by the nonperforming loans, the inflation rate and by the gross domestic product. So it can be observed that internal determinants have a biggest impact on the performance than the external one.

Key words: capital adequacy; return on assets; return on equity; nonperforming loans ratio; Gross Domestic Product; inflation ratio;

JEL classification: G21;

1. Introduction

Global financial and economic crisis in late 2007, generated lower profitability of credit institutions and created serious liquidity problems, which is why some of the major banks declared insolvency, while for others only government aid was an

opportunity to continue the activity. In these conditions, a first reaction of supervisors resulted in tighter capital requirements, liquidity, thus a emergence necessity of a new Basel Accord. Another reaction of the banking system to poor economic environment was found in lower lending rate, following credit crunch and increasing non-performing loans. So given that the volume of non-performing loans and default provisions increased, profitability and capital adequacy were registering low levels.

The study of the main factors with a significant impact on the profitability of banks, has a determinant role in ensuring financial stability. The economical literature has identified two categories of factors: internal factors (the manifestation of credit risk, capital adequacy, etc.) and external factors (growth rate of GDP, inflation, unemployment). Studies undertaken by Kosmidou in 2008 and Gul Zaman and Irshad in 2011 highlighted the correlation between the adequacy of capital and the level of profitability recorded by the banking system.

2. Literature review

The systemic role of the banks in the national economy generated to study the causes and the determinants factors impacting on profitability.

The profitability of a credit institution is measured using indicators such as ROA and ROE. According to the researchers (Hassan and Bashir, 2003), ROA measures better the profitability of a credit institution. Rivard and Thomas (1997) pointed out that ROA is not a distorted indicator by high levels of capital multiplier and ROA measures better economical entities to use portfolios assets in order to generate profits. ROE is an indicator that measures the income generated by each unit of capital to shareholders. Unlike ROA, ROE is influenced by the capital requirements imposed by supervisors.

The first factor impacting profitability, extensively studied by researchers was the capital adequacy, indicator that in many specialized studies was interpreted as having the primary role in absorbing shocks capital so as to avoid bank failures. In numerous studies, the idea that was started in the study of the correlation profitability - capital adequacy derives from the fact that the capital structure is a determinant of the profitability efficiency and of size the cost that the bank can practice on the interbank market and in its customer relationships. (Berger and Bonaccorsi di Patti, 2006).

A study undertaken by Kyereboah-Coleman in 2007 on the impact of capital structure on performance of 52 microfinance institutions that were active in Ghana for a period of ten years (1995-2004) demonstrated that financial debt has a positive impact on banking performance. Furthermore it was demonstrated that financial leverage should be regarded as an effective and disciplined method of management.

One hypothesis demonstrated in various studies (Abreu and Mendes (2002), Anthanasoglou (2005), Ramlall (2009) and Sufian and Razali Chong (2008)) targets the statement that, well capitalized banks recorded a high level of ROA indicator,

while in other studies made by Pejic Bach (2009) demonstrated the positive effects of capital funding on financial return.

Another intern factor with special impact on profitability, long studied by researchers is the quality of assets, measured by the nonperforming loans. Staikouras and Wood in 2003, have demonstrated the existence of an inverse relationship between the nonperforming loans and the profitability of credit institutions. Hassan and Wall in 2004, emphasized, in a study, that high levels of non-performing loans are associated with high rates of provisioning. Banks anticipate that the high level of capital loss determine the increase of provisions, reducing volatility and strengthen the solvency of the bank's income on medium term. (Ahmad and colab., 1999).

The external factors, such as inflation, the exchange rate, the level of GDP with impact on bank performance are factors over which the management of credit institutions can not affect in any way.

Extensively studied by researchers, the correlation between profitability and inflation is still ambiguous. The first research made on the correlation between the two variables was led by Revell in 1979. Then it was demonstrated that the effect of inflation on bank performance depends on the resemblance between the inflation rate and the rate of wage growth and other operational costs. A large number of studies with different approaches have revealed that there is a positive relationship between inflation and bank performance, while in a study conducted by Abreu and Mendes, in 2000, demonstrated a negative one between inflation and bank profitability in European countries. The negative relationship was demonstrated by Ayadi and Boujelbene, in 2012, in a study conducted in the Tunisian banking system in the period 1995-2005. Demirguc-Kunt and Huizinga, in 1999, showed that banks with high capital ratio working in countries economically developed tend to be less profitable in inflationary environments.

GDP is an indicator of the nature to appreciate the state of a national economy. Systemic role played by banks in national economies by the fact that they are the main creditor of individuals and businesses - demonstrates the importance of ensuring financial stability. Based on these considerations correlation profitability – growth of gross domestic product has been studied for a long time. As such the theory and empirical evidences have highlighted that the relationship between the growth trend of GDP growth and bank performance could have a pro-cyclical. When they register a positive growth rate of GDP, this give a positive increase of the bank profitability, while a negative growth rate of GDP has a negative effect on profitability. This result is conform with empirical evidence of researchers: Naceur (2003), Panayiotis and colab., (2005) and Francis (2011).

In other studies it started from the idea that a positive trend of GDP is expected to have a positive impact on profitability in the banking sector, a sensitive one to the general development of the economy. This statement is based on the premise that once the real sector is in boom periods, banks recorded lower levels of default by borrowers and they can predict an increase in asset portfolios. As such profitability should be a positive impact. These considerations are demonstrated in studies by

Bourke (1989), Molyneux and Thornton (1992), Demirguc - Kunt and Huizinga (1999), Bikker and Hu (2002), Athanasoglou al. (2008), Dietrich and Wanzenried (2009) and Davydenko (2011).

3. Research's methodology

In the research conducted have been processed datas recorded over a period of six years, between 2008 and 2013 by the Romanian banking system, as well as by the economic environment, and have been taken from the National Bank publications, the IMF and the National Institute of Statistics. The analysis of the bank performance was done through indicators ROA and ROE. The main objective of the study is to identify and analyze the principle determinants of bank performance. Starting from the premise that performance of credit institutions is influenced by internal and external factors, in the study were taken into account two internal factors, ie capital adequacy (solvency ratio) and nonperforming loans (which measures the quality of assets) and two external factors, namely the level of GDP and inflation rate. As a computational model was used the correlation Person's coefficient (<http://office.microsoft.com/ro-ro/excel-help/pearson-functia-pearson-HP010342758.aspx>):

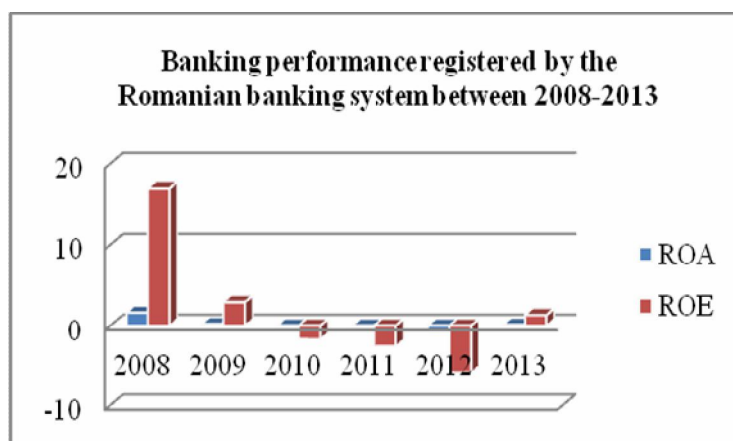
$$r = \frac{\sum (x - xm)(y - ym)}{\sqrt{\sum (x - xm)^2 \sum (y - ym)^2}}$$

The interpretation of the results we started from Pearson mathematical statistical model. Into the model it were considered independent variable: the GDP, inflation rate, solvency ratio and NPL. As dependent variable were considered the indicators ROA and ROE. The result of model application shows a value in the range -1 and 1. The negative value of the result indicates an indirect correlation (increasing a variable lowers the other) and its positive value shows a direct correlation (increasing one variable increases the other variables). A value of 0 the result suggests a weak correlation between the two variables.

4. Empirical Study on the determinants of performance in the Romanian banking system

Romanian banking system has experienced the effects of financial and economic crisis, but at a lower level compared with other systems, that have experienced bankruptcies where the intervention of governments permit to continue their work. According to the study conducted by the IMF in October 2013, the Romanian banking system and the banking systems from Croatia, Bulgaria, Ireland, Bosnia and Herzegovina, Slovenia, in the post-crisis low increases lending portfolios, with direct consequences on the decline profitability. Regarding the Romanian banking system, the performance recorded between 2008-2013, evidenced by ROA and ROE indicators is summarized in figure 1.

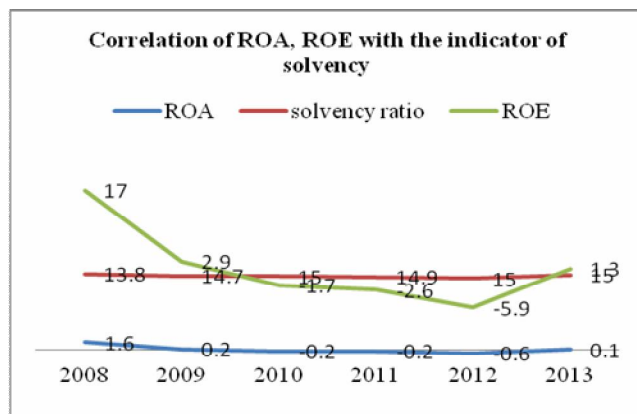
Figure 4.1: Banking performance registered by the Romanian banking system between 2008-2013



Source: IMF Financial soundness as Indicators, processed by the authors.

We can see a decrease in the profitability of the Romanian banking system due to the existence of fixed costs inseminated recorded by banks, as well as the economic contraction, the increasing number of companies that declare their insolvency, slow increases of GDP, increases in unemployment and inflation etc. A slow and positive evolution recorded by the two indicators, from 2012 is due to the banks concerning to reseat their balance to minimize fixed costs and reducing credit risk provisions, under International Financial Reporting Standards implementation. According to the informations provided by the Financial Stability Report, the accumulation of nonperforming loans and the request of the National Bank of Romania to the commercial banks to reassess guarantees were generated a decreasing trend recorded by the banking system in terms of performance bank.

Analyzing the impact of capital adequacy, namely the level of the solvency ratio can influence the bank performance, the results showed a correlation of -0.9, the variables introduced in the mathematical statistical model correlation between ROA and the solvency ratio and the correlation between ROE and same indicator. This result highlights that the growth of solvency ratio level is likely to generate a decrease in ROA and ROE level (figure 2). Moreover, given that the minimum solvency ratio is regulated, this fact influences the profitability of the Romanian banking system, but also the cost of financing that banks can practice in the conduct of business. Proper capitalization of Romanian banking system recorded in the period under review demonstrates the ability of banks to absorb economic shocks which have undergone, and setting the stage for the implementation of capital requirements imposed by Basel III.

Figure 4.2: Correlation of ROA, ROE with the indicator of solvency

Source: Datas processed by the central bank in the period 2008-2013 Monthly Bulletins

Another determinant factor on the profitability is the nonperforming loans. Romanian banking system, during 2008-2013, recorded one of the highest rates of non-performing loans of the banking systems in the region. In this case the evolution of NPLs was due mainly to lower lending rate recorded by the bank in the Romanian banking system, but also to the worsening of financial situation of borrowers (increasing number of companies entering insolvency, excessive exposure to currency risk, low capacity of borrowers to cover this gap, etc.). The results of mathematical calculations necessary to the correlation coefficient of -0.74 indicated a level where the correlation between ROA and NPL (table no. 1) and -0.75, if the correlation between ROE and NPL (table no. 2). This fact demonstrates the existence of a strong negative correlation between these variables.

Table no 4.1: Correlation ROA - NPL ratio

Year	ROA	Non-performing Loans Ratio	X-X _m	Y-Y _m	(X-X _m) ²	(Y-Y _m) ²	(X-X _m)*(Y-Y _m)
2008	1.6	2.7	1.45	-10.1	2.10	102.35	-14.67
2009	0.2	7.9	0.05	-4.92	0.00	24.17	-0.25
2010	-0.2	11.9	-0.35	-0.92	0.12	0.84	0.32
2011	-0.2	14.3	-0.35	1.48	0.12	2.20	-0.52
2012	-0.6	18.2	-0.75	5.38	0.56	28.98	-4.04
2013	0.1	21.9	-0.05	9.08	0.00	82.51	-0.45
MEDIUM / TOTAL	0.15	12.82			2.92	241.05	-19.61
CORRELATION COEFFICIENT							-0.74

Source: datas processed according to NBR monthly Bulletins and IMF- Soundness Financial Indicators

Table no 4.2: Correlation ROE - NPL ratio

YEAR	ROE	Non-performing Loans ratio	X-X _m	Y-Y _m	(X-X _m) ²	(Y-Y _m) ²	(X-X _m)*(Y-Y _m)
2008	17	2.7	15.2	-10.1	230.0	102.35	-153.44
2009	2.9	7.9	1.07	-4.92	1.14	24.17	-5.24
2010	-1.7	11.9	-3.5	-0.92	12.48	0.84	3.24
2011	-2.6	14.3	-4.4	1.48	19.65	2.20	-6.58
2012	-5.9	18.2	-7.7	5.38	59.80	28.98	-41.63
2013	1.3	21.9	-0.5	9.08	0.28	82.51	-4.84
MEDIUM / TOTAL	1.83	12.82			323.4	241.05	-208.49
CORRELATION COEFFICIENT							-0.75

Source: datas processed according to NBR monthly Bulletins and IMF- Soundness Financial Indicators

The conclusion that emerges is that from the category internal factors of the banking system, capital adequacy by the solvency ratio has a bigger impact on the profitability of the credit institution face to the NPL. This fact underscores the importance of the credit institution's capital prints to a specific activity in the attempt to achieve the principal objective of making profit.

In the category of external bank environment, in the research was chosen to be analyze the GDP, being a macroeconomic indicator likely to synthesize the national economy and inflation ratio tool used by the National Bank in achieving the main objective - price stability.

Although since 2009 the rate of GDP growth recorded a rising trend, the national economy has surpassed the turbulence caused by the economic and financial crisis, in the sense that this increase was due to the positive macroeconomic recorded only by some sectors, such the agriculture and the industry (especially Dacia - Renault through massive exports). The construction sector remains still an affected area by the crisis still contributing negatively to the GDP. The investment levels remained at low levels, proving the weak capacity of the national economy to generate added value. Based on these considerations, the results obtained by linear regression showed the existence of an indirect moderate correlation between the performance of the banking system and the level of gross domestic product in 2008-2013, taking into account variables ROA -0.44 and -0.46 GDP level and in context in which variables are entered into the model and the ROE GDP (tables 3 and 4).

This paradox may be due to high risk assumed by credit institutions in times of economic boom. Moreover highlights this indirect correlation an unsustainable growth of GDP based on reducing consumption and investment side supporting nonexistent.

Table no 4.3: Correlation ROE and GDP during 2008-2013

Year	ROE	GDP volume	X-X _m	Y-Y _m	(X-X _m) ²	(Y-Y _m) ²	(X-X _m)(Y-Y _m)
2008	17	503958.7	15.17	-42966.73	230.03	1846140173.34	-651662.12
2009	2.9	491273.7	1.07	-55651.73	1.14	3097115423.00	-59361.85
2010	-1.7	513640.8	-3.53	-33284.63	12.48	1107866816.13	117605.70
2011	-2.6	557348.2	-4.43	10422.77	19.65	108634064.99	-46207.60
2012	-5.9	586749.9	-7.73	39824.47	59.80	1585988145.28	-307975.88
2013	1.3	628581.30	-0.53	81655.87	0.28	6667680561.08	-43549.80
MEDIUM/TOTAL	1.83	546925.43			323.39	14413425183.83	-991151.54
CORRELATION COEFFICIENT							-0.46

Source: Authors computing using the NIS database and IMF Financial soundness Indicators

Table no. 4. Correlation ROA and GDP during 2008-2013

YEAR	ROA	GDP volume	X-X _m	Y-Y _m	(X-X _m) ²	(Y-Y _m) ²	(X-X _m)(Y-Y _m)
2008	1.60	503958.70	1.45	-42966.73	2.10	1846140173.34	-62301.76
2009	0.20	491273.70	0.05	-55651.73	0.00	3097115423.00	-2782.59
2010	-0.20	513640.80	-0.35	-33284.63	0.12	1107866816.13	11649.62
2011	-0.20	557348.20	-0.35	10422.77	0.12	108634064.99	-3647.97
2012	-0.60	586749.90	-0.75	39824.47	0.56	1585988145.28	-29868.35
2013	0.10	628581.30	-0.05	81655.87	0.00	6667680561.08	-4082.79
MEAN/TOTAL	0.15	546925.43			2.92	14413425183.83	-91033.84
CORRELATION COEFFICIENT							-0.44

Source: Authors computing using the NIS database and IMF Financial soundness Indicators

The second determinant of extern origin taken into account, in this study, to identify the main determinants of bank performance is the rate of inflation. In the analyzed period, the inflation ratio had a downward trend, due to the undertaken efforts of the National Bank in order to achieve that primary objective of price stability, although it was not always achieved the target set. Furthermore the increase price of energy products and poor agricultural production in 2012, in conjunction with the reduction in VAT for certain food products determined the entrance of the annual basis adjusted CORE2 in a negative territory. The results obtained by applying the coefficient of correlation between the ROA level and the inflation ratio, and the level of ROE and the inflation rate have demonstrated a strong direct correlation. So between the bank performance recorded by Romanian banking system and the inflation rate measured by ROA attain a Pearson coefficient of 0.78, while this indicator obtained for the correlation between ROE and the inflation rate is 0.77. Therefore an increase in the inflation rate is likely to generate an increase in bank performance (table 5).

Table no 4.5: Correlation ROA, ROE and inflation rate 2008-2013

Year	ROA	Inflation Rate	X-X _m	Y-Y _m	(X-X _m) ²	(Y-Y _m) ²	(X-X _m)*(Y-Y _m)
2008	1.6	7.85	1.45	2.41	2.10	5.82	3.50
2009	0.2	5.59	0.05	0.15	0.00	0.02	0.01
2010	-0.2	6.09	-0.35	0.65	0.12	0.42	-0.23
2011	-0.2	5.79	-0.35	0.35	0.12	0.12	-0.12
2012	-0.6	3.33	-0.75	-2.11	0.56	4.45	1.58
2013	0.1	3.98	-0.05	-1.46	0.00	2.13	0.07
MEDIUM /TOTAL	0.15	5.44			2.92	12.96	4.81
CORRELATION COEFFICIENT ROA / inflation ratio							0.78
Year	ROE	Inflation Rate	X-X _m	Y-Y _m	(X-X _m) ²	(Y-Y _m) ²	(X-X _m)*(Y-Y _m)
2008	17	7.85	15.2	2.41	230.03	5.82	36.58
2009	2.9	5.59	1.07	0.15	1.14	0.02	0.16
2010	-1.7	6.09	-3.53	0.65	12.48	0.42	-2.30
2011	-2.6	5.79	-4.43	0.35	19.65	0.12	-1.56
2012	-5.9	3.33	-7.73	-2.11	59.80	4.45	16.30
2013	1.3	3.98	-0.53	-1.46	0.28	2.13	0.78
MEDIUM / TOTAL	1.83	5.44			323.39	12.96	49.96
CORRELATION COEFFICIENT ROE / inflation ratio							0.77

Source: authors calculations after INS database and IMF Financial soundness Indicators

It can be seen that the two external factors of the banking environment, studied have a significant influence on bank performance. The inflation rate is measured by a stronger impact on the bank performance than the gross domestic product level. Moreover, from the study, it can be seen a stronger correlation between the inflation ratio and ROA, while in the case of GDP a stronger correlation was registered the coefficient comparing with the variable ROE.

5. Conclusions:

The actual research demonstrated first of all a correlation stronger between internal determinants and profitability recorded by Romanian banking system in the period considered, unlike external determinants. In terms of capital adequacy was achieved more or less the same level of Pearson coefficient, so when taking into account the bank performance measured by ROA and ROE comparing with the solvency ratio. Given that, the new capital requirements imposed by the new Basel III Agreement to be implemented until the beginning of 2019 are likely to influence the level of banking performance obtained, a future research can be realized in studying the correlation between the structure of equity and the banking performance obtained.

The study showed that the NPL ratio is an important determinant of profitability of the Romanian banking system, having a stronger correlation between ROE and this indicator, because of the fact that a rise in the number of defaults registered will determine an upward trend of provisions with negative impact on the profitability of credit institutions.

Exogenous determinants on performance should be closely followed by credit institutions so that the measures taken, the level of potential losses generated by these variables unable to be managed from within to be minimal.

The conducted research revealed that the fourth determinants analysis during 2008-2013, the capital adequacy in the Romanian banking system had the greatest impact on bank performance, negatively influencing its level.

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