ANALYSIS OF THE ROMANIAN BANKS' PERFORMANCE THROUGH ROA, ROE AND NON-PERFORMING LOANS MODELS

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ABSTRACT: *General assumption of this study is that the banks performance represents their ability to generate sustainable profitability and that banks' profitability is one important issue of contemporary banking field, grace to its role in emphasizing of the financial soundness of banks, abreast to others indicators regarding to the capital adequacy or assets quality. The paper examines how is affected banking profitability (expressed through traditional measures of performance ROA - Return on Assets and ROE - Return on Equity) by the CRR Credit risk ratio in Romanian banking system during March 2008 - June 2013. We developed two regression models in order to study the dependence between mentioned variables. We found that ROA and ROE vary each of them depending on the CRR Credit risk ratio, which is expressed as the ratio of gross value of exposure to loans and related interest under "doubtful" and "loss" to total classified loans and related interest pertaining to non-bank loans, off-balance sheet items excluded.*

Keywords: *ROA Return on Assets, ROE - Return on Equity, Credit risk ratio, Regression model*

JEL Codes: *D12, C58, G21*

Introduction

Significant level of non-performing loans and faster cross-border deleveraging are considered the major weaknesses of the Romanian banking sector, according to National Bank of Romania NBR's Financial Stability Report (National Bank of Romania, 2013). Fortunately, during 2004-2012, deleveraging moderately manifested as a consequence of slight increase in total bank assets and increase in capital due to new capital regulations (Iuga and Cioca, 2013). The results of credit institutions are affected by the high level of provisioning and by the high non-performing loan ratio.

The importance of our research rests on the characteristics of the banks' performance or profitability like a burning actual subject for banks from everywhere. The answers to the question *How to measure bank performance? Performance or profitability?* preoccupied the academic and business community, especially in the last years, in the international financial crisis context.

An interested and very well documented point of view belongs to European Central Bank, which published in 2010 a specific Appendix (European Central Bank, 2010). The study considered that **the bank performance is the capacity of bank to generate sustainable profitability and the basic concepts of the performance are earnings, efficiency, risk-taking and leverage**. *Efficiency* is considered the bank's capacity to obtain revenue from limited assets and to make profit. *Risk-taking* represents the necessary modification to earnings for the undertaken risks to generate them. *Leverage* could improve results in the bank's ascent, like multiplier, but, contrary, due to exceptional and unexpected losses, it might contribute to bank's failure. An exhaustive approach of the indicators of the banks' performance indicators is impossible to be made, on account of multitude methods to measure the banks' performance. The mentioned study identified three main categories of measures of performance: traditional measures of performance (*ROA - Return on*

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Assets, ROE - Return on Equity, Cost to income ratio, Net interest margin), economic measure of performance *(EVA Economic value added, RAROC Risk adjusted return on capital)* and market-based measure of performance *(Total share return, Price-earnings ratio, Price-to-book value, Credit default swap)*.

Otherwise, studying the performance concept generates different results depending on the nature of the stakeholders which analyze the term. If they are depositors, the capacity of banks to manage their savings is the measure of performance; if they are equity holders, then the performance is reflected in obtaining the satisfied levels of profit and if they are banks' managers, then the performance is considered from profit point of view and also, taking into considerations employees' requests. Such multitude of opinions opens new directions in banking performance research, but in this paper we point only to classical performance indicators, that express the banks capacity to obtain profitability. The role of profit is well known because it categorical contributes to the banks' capacity to defense against unexpected loss and consolidate the capital base of banks. Also, psychological effect of profit has to be into consideration, because the existence or missing of the profit affects the public confidence in the banks (Nistor et al., 2010). Nowadays, banks' ability to create profit is affected by the varied factors, that could be grouped in internal (regarding to banks specific features - size, ownership, business volume, interest rate, labour productivity etc.) or external (deregulation or over regulations of financial markets, macroeconomic conditions and indicators, competition etc).

We focus our attention on an internal factor that could influence the banks' performance, through studying the Credit risk ratio CRR like a possible element that would affect the banks' performance. Choice of this variable was no accidental, because our research underlined the current situation of the banking systems that confront with a significant slowdown in credit growth and with the non-performing loans problems in recent years. The assets part of banks' balance sheet is affected by the non-performing loans, which from accounting point of view impose setting up provisions for loan losses. In this way the income statement is negatively upset and banks have to preoccupy in improving the loans quality and reduce the non-performing loans.

Research Methodology and Argument for the Research

According to the interpretive and critical paradigm, initially we developed the literature review based on interpreting techniques and literature analysis. The literature review is the first essential step in conducting of a research, because facilitates understanding of the main theories or empirical tested studies in the domain and how they can contribute to the applicative research. There is a common preconceived opinion that the literature review is comfortable to carry out, but if we search deep inside into the process, we can establish that the literature research of high quality implies particular rules and techniques. Otherwise, a research literature review is a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners (Fink, 2010). The literature review is considered the selection of available documents (both published or unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed (Hart, 2003). There are recognized the following stages of methodology for systematic review (Jesson et al, 2011): define the research question, design the plan, search for literature, apply exclusion and inclusion criteria, and apply quality assessment and synthesis.

In order to study the econometric models of banks' profitability, we exactly established what we want to research and which the proper sources of information are. We chose the online bibliographic specialized databases that contain economic studies (e.g. Science Direct, Springer, Emerald) and searched for relevant journals or words in the econometric models of banks' profitability. Then, our work implied analysis and sampling of the founded data collections, in the

trial to present in the paper only the relevant data. We consider that the main risks in realizing the literature review are choosing of the non-relevant sources and moving off from a comprehensive review. We tried to systematically examine the sources and distinguish what are adequate for our aim. Finally, we reported on the current knowledge in the proposed theme and explained the research findings.

The applicative part of our research consists in quantitative analysis through developing of two regression models for studying the dependence between main traditional profitability's banking indicators ROA Return on assets and ROE Return on equity and CRR Credit risk ratio, at the level of Romanian banking system, during March 2008 - June 2013. The purpose of the models is to permit the estimation the effect of the independent variable or explanatory - Credit risk ratio CRR - on the dependent variables - ROA Return on Assets and ROE Return on equity.

The paper is organized as follow: first part reviews the published literature referring to proposed theme and organizes the literature according to the major topics and methodology. Then, we created and tested the econometrical model and in the last part we present the findings, conclusions, limits of the research and future approach.

Literature review

In recent years, there have been published numerous studies that analyze the banks' profitability depending on the different criteria and most of these studies are published in English. In this way is ensured the international visibility of the researches. Also, we remark significant increasing of the national literature in the area in the last years.

A study that belongs to Andries and Cocris (2010) analyzed the efficiency of the main banks in Romania, Czech Republic and Hungary for the period 2000-2006. They made a frontier analysis with a nonparametric model DEA Method (Data Envelopment Analysis) and a parametric method SFA Stochastic Frontier Analysis. Differences between the studied countries in the level of efficiency of banks were proved, influenced by a series of micro and macroeconomic factors. A relevant study belongs to Chitan (Chitan, 2012), who analyze the way in which the bank performance in the Romanian banking system is influenced by the minimum capital requirements, the loan classification and provisioning for the specific credit risk, the liquidity and insurance of deposits and specific indicators. His findings indicate that the coefficient on capital regulatory is negative and significant related to ROA (Return on Assets) and ROE (Return on Equity) is positive and significant related to bank development.

Few banks that activate in Romania are studied by the Lupu and Nichitean (Lupu and Nichitean, 2011) from bank performance perspective. The authors divide the banks in two categories, one that implements strong governance codes and one that plays less attention to corporate social responsibility. Their results suggest that the banks from first category have better financial results while the second category is less preoccupied with the bank performance.

Stochastic frontier models contribute to demonstrating the impact of the European integration process on increasing of the banking efficiency levels for 240 banks from 12 countries (including Romania) during 2000-2008 (Gallizo et al., 2011).

Data envelopment analysis DEA was used by Nițoi (Nițoi, 2009) in order to analyze the efficiency and productivity of the Romanian banks from 2006-2008. His findings suggest that majority of commercial banks were inefficient referring to the proper management of costs.

Generally, we can classify the identified international studies on banking profitability using the following taxonomy and research hypothesis and grouping the relevant studies in the following table:

Table no. 1

Banks' profitability taxonomy in the research studies

Authors and Year	Subject	Variables	Econometrical model	Results
Kakilii Acaravci and Calim, 2013	Long-run relationship between the bank specific and macroeconomic factors and the profitability of commercial banks in Turkish banking sector, 1998-2011	*Dependent variables* Return on Assets Return on Equity Net Interest Margin *Explanatory Variables* Bank-Specific Variables Total Loans/Total Assets, Total Deposits/Total Assets, Liquid Assets/Total Assets, Fees and Commission Incomes/Total Assets, Fees and Commission Expenses/Total Assets, Equity / Total Assets, Natural Logarithm of Total Assets Macroeconomic Variables Real Gross Domestic Product, Real Exchange Rate, Annual Inflation Rate, Real Interest Rate	Time series econometric methods Estimation of the vector autoregressive VAR $$\Delta Z_t = \Pi Z_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Z_{t-i} + \mu_0 + \mu_1 t + \upsilon_t$$ where Z_t is an (nx1) column vector of p variables, Γ and Π are matrices of coefficients, μ_0 and μ_1 are (nx1) column vectors of constant terms and trend coefficients, Δ is a difference operator, and $\square_t$ is p-dimensional Gaussian error with mean zero and variance matrix.	Banking sector is sensitive to the overall development of the economy
Bolt et. al, 2012	Relation between bank profitability and economic activity, 17 countries, 1979-2007	*Bank data* Profit before tax, Net interest income, Other income, Net provisions and costs, Loans, Deposits, Other net interest bearing liabilities *Macroeconomic data* Real GDP growth, Inflation, Long-term interest rate, Short term interest rate, Local stock market index return and volatility, Unemployment rate, Sloped yield curve	Dynamic build-up of a bank's loan portfolio and its effect on net interest income, taking into account differences in lending rates, maturities and write-offs across time $$\Pi_t = NII_t + OI_t - (BL_t + OC_t).$$ where Π_t is bank profit, NII_t denotes net interest income, OI_t other income, BL_t bad loan losses and OC_t operating cost at time t.	In the severe recessions, pro-cyclicality of the profit of banks manifested more than in the normal economic conditions.

Authors and Year	Subject	Variables	Econometrical model	Results
Tan and Floros, 2012	Effect of GDP growth on bank profitability in China during 2003-2009	*Dependent variables* ROA Return on Assets NIM Net Interest Income/Earning Assets *Explanatory variables* Bank-specific variables: Bank size, credit risk, liquidity, taxation, capitalization, cost efficiency, non-traditional activity and labour Productivity Industry-structure factors: Concentration ratio, banking sector development and stock market development Macroeconomic environment: GDP growth	GMM technique General Method of Moments $$\Pi_{it} = c + \sum_{j=1}^{J}\beta_j X_{it}^j + \sum_{l=1}^{L}\beta_l X_{it}^l + \sum_{m=1}^{M}\beta_m X_{it}^m + \varepsilon_{it},$$ $$\varepsilon_{it} = v_i + u_{it}$$ where Π_{it} is the profitability of bank i at time t, with $i=1,\ldots,N$, $t=1,\ldots,T$, c is a constant term, X_{it}'s are the explanatory variables and ε_{it} the disturbance, with v_i the unobserved bank-specific effect and u_{it} the idiosyncratic error.	Affecting of the Chinese banking industry profitability by the level of non-performing loans. Chinese banks with higher levels of capital have lower profitability.
Kanas et. al, 2012	Affecting of US bank profitability by the business cycle, short-term interest rates, inflation expectations, credit risk and loan portfolio structure, 1988-2011	*Dependent variables* ROA Return on Assets ROE Return on Equity *Non-parametric explanatory variables* Business cycle, Monetary policy, Inflationary expectations, Bank loan portfolio, Diversification, Credit risk *Control variables* Inflation, Capital, Financial structure	Semi-parametric empirical model of bank profitability $$E\left(\frac{BP}{X,Z}\right) = \alpha + \beta'X + f(Z)$$ $\alpha + \beta'X$ represents the parametric component, and f(Z) the non-parametric component. The non-parametric component f(Z) is estimated using splines with optimal basis functions	Evidence for non-parametrically determining variables of U.S. bank profitability
Tan and Floros, 2012	Effects of inflation on bank profitability in China during 2003-2009	*Dependent variables* ROA Return on Assets NIM Net Interest Income/Earning Assets *Explanatory variables* LNTA (log of total	GMM General Method of Moments $$\Pi_{it} = c + \sum_{j=1}^{J}\beta_j X_{it}^j + \sum_{l=1}^{L}\beta_l X_{it}^l + \sum_{m=1}^{M}\beta_m X_{it}^m + \varepsilon_{it},$$	Existence of a positive relationship between bank profitability, cost efficiency, banking sector development, stock market development and inflation in China.

Authors and Year	Subject	Variables	Econometrical model	Results
		assets), PL (loan loss provisions/total loans), LA (loans/assets), TOPBT (tax/operating profit before tax), ETA (shareholder's equity/total assets), OETA (overhead expenses/total assets), NIITA (non-interest income/total assets) and TRNE (total revenue/number of employees).	$$\varepsilon_{it} = v_i + u_{it}$$ where Π_{it} is the profitability of bank i at time t, with $i=1, \ldots, N$, $t=1, \ldots, T$, c is a constant term, X_{it}'s are the explanatory variables and ε_{it} the disturbance, with v_i the unobserved bank-specific effect and u_{it} the idiosyncratic error.	
Athanasoglou et. al, 2008	Effect of bank-specific, industry-specific and macroeconomic determinants of bank profitability for a panel of Greek banks, 1985-2001	*Dependent variables* Profitability (ROA and ROE) *Determinants* Bank-specific (Capital, Credit risk, Productivity growth, Operating expenses management, Size) Industry-specific (Ownership, Concentration) Macroeconomic (Inflation expectations, Cyclical output)	GMM technique General Method of Moments $$\Pi_{it} = c + \sum_{j=1}^{J} \beta_j X_{it}^j + \sum_{l=1}^{L} \beta_l X_{it}^l + \sum_{m=1}^{M} \beta_m X_{it}^m + \varepsilon_{it},$$ $$\varepsilon_{it} = v_i + u_{it}$$ where Π_{it} is the profitability of bank i at time t, with $i=1, \ldots, N$, $t=1, \ldots, T$, c is a constant term, X_{it}'s are the explanatory variables and ε_{it} the disturbance, with v_i the unobserved bank-specific effect and u_{it} the idiosyncratic error.	Effect of *Bank-specific variables* (Capital - positively, Credit risk – negatively, Productivity growth - positively, Operating expenses management - negatively, Size – no effects) *Industry-specific variables* (Ownership - no effects, Concentration – no effects) *Macroeconomic variables* (Inflation expectations - positively, Cyclical output - affects)

The main findings of the literature review show the prevalence of the ROA and ROE indicators in banks' profitability modeling. The most often these indicators are considered the dependent variables, while explanatory variables cover multitude of economic bank-specific, industry-specific or macroeconomic determinants of banks' profitability. We find that the GMM General Method of Moments technique prevails in modeling the banks' profitability using panel of data and banks in the different periods or areas. Also, the authors used Vector autoregressive VAR method or semi-parametric approach in studying the relationship between banks' profitability and varied variables.

Data and models

We developed two regression models (CRR_ROA and CRR_ROE) in order to determine if CRR Credit risk ratio affect ROA Return on assets and ROE Return on equity in the Romanian banking system. The data are collected from the Monthly Bulletin issued by the National Bank of Romania and from electronic web page of central bank during March 2008 - June 2013 and refer to the banks Romanian legal entities and Creditcoop, because foreign bank branches do not report in Romania on capital adequacy, own funds and loan classification. We process the data using EViews 7.2 support program based on 64 initial observations and 61 observations after EViews adjustments.

Regression is a research method that permits the studying the existence of relationship between the dependent variable y (explicit, endogenous or resultative) and one or more variables x_i called independent (explanatory, exogenous or of influence) (Odăgescu and Odăgescu, 2009). We did not identify for this research the need to introduce a qualitative variable; these variables are quantified by means of dummy variables (Ivan, 2011). The dependent variables are considered ROA Return on assets and ROE Return on equity and the independent variable is CRR Credit risk ratio.

Table no. 2

Significance of the models' variables

Dependent Variable	*Significance*
ROA Return on assets	Ratio of operating profitability of net income to average total banking assets during a year.
	$$ROA = \frac{Net\ income}{Average\ total\ assets} \times 100$$
ROE Return on equity	Ratio of banks' profitability of net income to average total equity.
	$$ROE = \frac{Net\ income}{Average\ total\ equity} \times 100$$
Independent Variable	*Significance*
CRR Credit risk ratio	Ratio of gross value of exposure to loans and related interest under "doubtful" and "loss" to total classified loans and related interest pertaining to non-bank loans, off-balance sheet items excluded.
	$$CRR = \frac{Gross\ value\ of\ doubtful\ and\ loss\ loans\ and\ related\ interest}{Total\ nonbank\ loans\ and\ related\ interest\ -\ Off\ balance\ sheet} \times 100$$

We statistically describe in the following table the variables of the models. The maximum value of ROA is 1.51% (recorded in March 2008) and the minimum is -0.21% (recorded in Decembrie 2012). The maximum value of ROE is 16.45% (recorded in March 2008) and the minimum is -1.97% (recorded in Decembrie 2012). The average value of ROE and ROA are positive, but very low, owing to the considerable decrease in the profit, that migrated in the negative

territory. CRR Credit risk ratio increased from 4.42% in March 2008 to 30.49% in June 2013, due to the worsening of the banks' portfolios.

Table no. 3

Descriptive analysis of the models' variables

Item	ROA	ROE	CRR Credit risc ratio
Mean	0.111406	1.207656	18.55906
Median	0.020000	0.210000	20.83000
Maximum	1.510000	16.45000	30.49000
Minimum	-0.210000	-1.970000	4.420000
Std. Dev.	0.272920	2.961557	8.206870
Skewness	2.512077	2.574791	-0.377295
Kurtosis	12.14391	12.35517	1.967924
Jarque-Bera	290.2753	304.0996	4.358900
Probability	0.000000	0.000000	0.113104
Sum	7.130000	77.29000	1187.780
Sum Sq. Dev.	4.692573	552.5615	4243.221
Observations	64 61 after adjustment	64 61 after adjustment	64 61 after adjustment

Data processing conducts to the following results considering the dependent variable ROA Return on assets and ROE Return on equity. The C row refers to the intercept for dependent variables ROA and ROE of the equations.

Table no. 4

Characteristics of the ROA Return on assets regression model

Dependent Variable: ROA Return on assets
Method: Least Squares
Sample (adjusted): 2008M06 2013M06
Included observations: 61 after adjustments
Convergence achieved after 4 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.091136	0.078458	1.161587	0.2502
DDCREDIT_RISC	-0.039753	0.022322	-1.780851	0.0802
AR(1)	0.822508	0.068401	12.02488	0.0000

R-squared	0.735178	Mean dependent var		0.076393
Adjusted R-squared	0.726047	S.D. dependent var		0.199583
S.E. of regression	0.104463	Akaike info criterion		-1.632039
Sum squared resid	0.632926	Schwarz criterion		-1.528225
Log likelihood	52.77718	Hannan-Quinn criter.		-1.591353
F-statistic	80.50765	Durbin-Watson stat		2.009365
Prob(F-statistic)	0.000000			

Inverted AR Roots	.82	

Because the Fisher test (F-statistic 80.50765 for ROA and 84.64341 for ROE, higher than the benchmark in the area) has a probability equal with zero, the ROA and ROE models could be

considered statistically valid and this suggest that the models' estimations are significant. Our models accounts for 73.51% for ROA and for 74.48% variance in the dependent variables.

<div align="right">Table no. 5</div>

Characteristics of the ROE Return on equity regression model

Dependent Variable: ROE Return on equity
Method: Least Squares
Sample (adjusted): 2008M06 2013M06
Included observations: 61 after adjustments
Convergence achieved after 4 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.944508	0.850176	1.110957	0.2712
DDCREDIT_RISC	-0.432623	0.235980	-1.833303	0.0719
AR(1)	0.826257	0.066871	12.35598	0.0000
R-squared	0.744816	Mean dependent var		0.824590
Adjusted R-squared	0.736016	S.D. dependent var		2.153587
S.E. of regression	1.106499	Akaike info criterion		3.088208
Sum squared resid	71.01166	Schwarz criterion		3.192021
Log likelihood	-91.19034	Hannan-Quinn criter.		3.128893
F-statistic	84.64341	Durbin-Watson stat		2.019146
Prob(F-statistic)	0.000000			
Inverted AR Roots	.83			

We test the econometrical model and estimate the quality on the model based on the value of R-squared and obtain that 73.51% from the ROA is explain through the ROA model and 74.48% from the ROE is explain through the ROE model. Usually, R-squared has values between 0 and 1 and if it is more close to 1 then the model is correctly defined. In this case the quality of the ROE and ROA models is satisfied. This means that the remainder part of the variation in completing to 100% represent the influence of another factors, which did not take into consideration in current models (26.49% for ROA and 25.52% for ROE). Values of the Adjusted R-squared very closed to the R-squared (and not significant descend upon 1) and that explain the other independent variables that could influence the dependent variables suggest the validity of the models. Durbin-Watson test shows that the errors are uncorrelated (because the values are approximate 2) and this suggests that in the models not are the serial correlations in the residuals of the estimated equations. The estimated standard deviation of the error term is 0.104463 for ROA and 1.106499 for ROE. In order to make comparisons between different regressions and to analyze if the models are better than other models, we analyzed some tests or functions. Log likelihood function record the value 52.77 for ROA and -91.19 for ROE shows the difference between the log likelihood values of the restricted and unrestricted version of the equations. It is use to find the omitted or redundant variables from the models. Akaike information criterion, Schwarz criterion and Hannan-Quinn criterion record low values (even negative for ROA) and conduct to the choice of the models.

The above explanations contribute to the accepting of the ROA and ROE models like statistical models.

ROA regression model is represent by the estimation equation:

$$ROA = C(1) + C(2)*DDCREDIT\_RISC + [AR(1)=C(3)]$$

ROA = 0.0911359878276 - 0.0397526168272*DDCREDIT_RISC + [AR(1)=0.822508444105]

An increasing with 1% in CRR Credit risk ratio contributes to the decreasing of ROA Return on assets with 3.97%. The influence of free term is positive, but not significant (9.11%) on the evolution of ROA.

ROE regression model is represent by the estimation equation:

ROE = C(1) + C(2)*DDCREDIT_RISC + [AR(1)=C(3)]

ROE= 0.944508257485 - 0.432623089237*DDCREDIT_RISC + [AR(1)=0.826256957912]

An increasing with 1% in CRR Credit risk ratio contributes to the decreasing of ROE Return on equity with 4.32%. The influence of free term is positive, but not significant (9.44%) on the evolution of ROA. Both models present the significant autoregressive influence (AR 82.25% for ROA and 82.62% for ROE) of the each dependent variable ROE and ROA upon itself. Autoregressive term defines the measure in which an economic variable is auto correlated and its actual level significantly depends by its previous levels (Şipoş, 2003). The main cause of the autoregressive influence could be explained by the informational intrinsic asymmetry of the variables and the volatility and incomplete capacity of banks to compute the information regarding the variables. AR(1) is an autoregressive model of order one and explain the own evolution of the variable based only one single previous period.

Conclusions

Analysis of the studies on banks' profitability contributed to defining the research question and to designing the plan for econometric modeling. Prevalence of the ROA Return on assets and ROE Return on equity in the majority of economic studies is unmistakable and their relevance contributes to using them in our approach. The outlook for the Romanian banking system reveals in the last years the worsening of the non-performing loans that impose considerable level of provisioning which could affect the profitability indicators. This assumption conducted to research hypothesis, which computes the exogenous variable CRR Credit risk ratio as ratio of gross value of exposure to loans and related interest under "doubtful" and "loss" to total classified loans and related interest pertaining to non-bank loans, off-balance sheet items excluded.

This paper has examined how CRR Credit risk ratio affects the main indicators of profitability - ROA and ROE of banks Romanian legal entities and Creditcoop, during March 2008 - June 2013. We develop two regression models (CRR_ROA and CRR_ROE) that clearly show that there exists the relationship between explanatory and dependent variables. The empirical results of this study find that CRR Credit risk ratio has a negative impact on banks' ROA and ROE, which could be explained through the contribution of the non-performing loans to the decreasing of the profit. ROA is decreasing with 3.97% and ROE with 4.32% on the 1% increase in the Credit risk ratio. Also we find a significant autoregressive influence of the each dependent variable ROE and ROA upon itself, which could be explained by the informational intrinsic asymmetry of the variables and the volatility and incomplete capacity of banks to compute the information regarding the variables. The analysis suggests the vulnerability of banks Romanian legal entities, from non-performing loans perspective potentially further risk generators if banks will not succeed to efficiently manage their loans portfolio. Limits of the research consist in modeling of reduced number of variables and the existence of other factors that could influence the banks' profitability opens new research directions, which may aim modeling the bank-specific or macroeconomic variables in studying the banks' profitability.

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