

## **MODALITIES OF BANKING RATINGS MEASUREMENT**

**Ioan BĂTRÂNCEA<sup>1</sup>, Lucian GĂBAN<sup>2</sup>, Ioan RUS<sup>3</sup>**

<sup>1,3</sup> *“Babeş-Bolyai” University, Cluj-Napoca, Romania*

<sup>2</sup> *“1 Decembrie 1918” University, Alba Iulia, Romania*

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### **Abstract**

*In this paper the author makes an analysis of financial stability in ten banks in Romania, based on established rating models and correlates the results with ratings agencies Standard & Poor's, Moody's or Fitch. Also the author evaluated the ratings of banks in the sample using methods CAAMPL, Stickney and Basel III. The work is an important guide for managers of banks must constantly assess the performance and risk rating through the bank.*

**Key words:** *rating, CAMEL, CAMEL, logit, rating agencies*

**JEL classification:** G21, G24

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### **1. Introduction**

Credit institutions do their business in the specific market conditions, and therefore they are subject of the systemic risk specific to this sector.

To have early signs of possible hazards that may cause serious financial difficulty, central banks have developed over time specific rating systems in each country and thus supplementing the ratings given by established rating agencies.

Such rating systems were introduced in the 1980s in the US in response to the financial crisis that has affected a significant number of US banks in that period, and started the bankruptcy of many banks. Latest financial crisis banking component of the banking crisis began in 2007

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<sup>1</sup> email: [i\\_batrancea@yahoo.com](mailto:i_batrancea@yahoo.com)

<sup>2</sup> email: [gabanvasilelucian@gmail.com](mailto:gabanvasilelucian@gmail.com)

<sup>3</sup> email: [ioan.rus@yahoo.com](mailto:ioan.rus@yahoo.com)

bankrupted annually since 2010 nearly 150 local US banks, which showed that a warning system alone is insufficient to assess the health of individual banks.

More recent testing method for assessing stress faced by banks in the European Union comes to periodically assess the difficulties through which a bank are determined primarily by defective bank management. Asset quality tested by the European Central Bank aims to restore investor confidence in European banks.

Therefore in this study we sought to achieve a cross-analysis of methods central banks and used credit scoring and logit method based on empirical research at the level of 10 banks in Romania, and we correlated the results with ratings agencies Standard & Poor's, Moody's and Fitch .

## **2. Literature review**

The issue rating is widely debated in the literature; extensive studies on this topic are found in prestigious journals. Thus, in a recent paper presents an econometric model rating of Moody's Investors Service of two groups of banks. The significant factors in regressions are the factors that are crucial for Moody's methodology: county-specific volatility of economic growth and the corruption index; bank-specific size (log of total assets), capital adequacy (customer deposits / shareholders' equity, shareholders' equity / total assets); assets quality (problem loans / gross loans) efficiency (personnel expenses / operation income), and profitability (interest expense / average interest bearing liabilities) (**Peresetsky, Karminsky, 2011**) [1].

In another paper analyzes the impact on the ratings sovereign rating actions in emerging markets banks. The authors concluded that the rating of banks with a different structure of ownership in a country is strongly influenced by the country's rating. On the other hand banks rating has a significant influence on the country rating (**Gwion, Rasha, Gwilym, 2013**) [2].

Donald Morgan, in his study shows that assessment undertaken bonds are a difficult problem to solve particularly opaque industry with two components: banks and insurance companies. The research undertaken author concludes that the banks with a high degree of indebtedness adversely affect the rating of the current uncertain (**Morgan, 2002**) [3].

The work of renowned authors are studying the extent to which risk and uncertainty have a significant impact on banks and showed that the banks are governed more uncertainty rather than risk and banks' activity takes place

under the influence of many unpredictable factors (**Aikman, Galesic, Gigerenzer, Kapadia, Katsikopoulos, Kothiyal, Murphy, Neumann, 2014**) [4].

In a research conducted by Norges Bank in 2012 shows that rating decisions affecting investors and restricts their access to information on bank funds and bankruptcy. To ensure a balance between the information provided to investors authors of this paper believe that the rating agencies credit rating is lower, and found that the latter has a pro-cyclical impact of the bankruptcy risk (default) (**Holden, Natviky, Vigier**) [5].

In a statistical research other authors studied the impact of 18 factors balance sheet of banks have on the indicator ROE, and concluded that it can establish a multiple strong connections between these factors and ROE, based on univariate method (**Bătrâncea, Bătrâncea, 2008**) [6].

In another paper the rating analysis is based on some of the indicators used for the financial analysis. Using the rating analysis, one can determine the financial soundness of the company. The rating determined for a company, together with guarantees rating, fundamentals the decision of granting a credit and its cost (interest percent). In order to be valid, the rating system has to be a unitary rating system within the group and elaborated in accordance to Basel II regulations regarding the internal approach of the rating system. The rating analysis uses three key principles: Clear rating responsibilities, the rigorous enforcement of the „four eyes” principle in the rating process, Rating authorization independent from account management (**Bătrâncea, Bătrâncea, Popa, 2007**) [7].

“Credit scoring” method aims to provide predictive models for assessing risk of failure of an enterprise. This method is based on statistical techniques of discriminate analysis of information provided by the transformation of economic and financial indicators in a score able to predict success or failure of a business. All forecasts and predictions are based on published financial statements. Applying “credit scoring” method involves observing a set of enterprises consisting of two distinct groups: a group of enterprises with financial difficulties and a group of healthy firms. For each of the two groups is established a set of rates (5-8 financial ratios), the most relevant in terms of predictability of failure, then it’s determined the best linear combination of rates to distinguish the two groups of firms. In the failure prediction models are met the most important financial ratios such as return on assets, asset

turnover rate, leverage, liquidity, interest coverage, etc., **(Bătrâncea, 2011) [8]**.

Traditionally an institution's default risk was assessed by the indicators. Thus, among the most important were those who remember measured profitability, liquidity and solvency. In this context we developed multivariate analysis, which assumes follow certain steps in order to obtain a score on which company can be framed either in the category of bankrupt or in that of the healthy financially. So they began to gain importance especially such models - the dynamic modeling default risk for non-banking institutions (e.g., Altman, Canon - Holder), after which they were adapted to banking institutions (e.g. Stickney model **(Bătrâncea, Bătrâncea, Stoia, 2013) [9]**).

### **3. Method and results**

In the US, each bank is subject to an analysis of six indicators of financial and non financial which are considered the defining activity of the credit institution or Capital Assets (English. Assets), Management, Profitability (English. Earnings), liquidity (English. liquidity) and sensitivity to market risk (English. sensitivity), each original being taken generic rating system generically called CAMELS (Capital, Assets, Management, Earnings, Sensitivity), the ratings given to each group of indicators taking values between 1 and 5, the smaller value represents a good financial situation of the bank, and most precarious financial situation. They are calculated both on each component and accumulate rating on the bank, through aggregation.

At the same time the ratings are awarded annually, after the checks carried out on-site supervisors, checks that can be made with increasing frequency in the ratings registration status indicates poor financial condition of credit institutions. Since the frequency of annual checks can allow significant deterioration of the financial situation of banks, without that they can be seized in the US achieved a rating system simplified, containing only 4 components, on which lay ratings quarterly, and this is called CAEL.

Each component of the rating include more indicators which are divided into ratings taking into account the performance of a group of banks that have similar characteristics (called peer group), and is generally the activity profile and size of the credit institution.

Other EU countries have adopted different rating systems, inspired by the CAMELS system, as presented below.

In 1997 France introduced a rating system that uses information from both banks and the banking system from different sources. This system includes 14 indicators, a number higher than the US rating system, given number, division into categories CAMELS system components include a more limited sphere. Also, and this rating is given in aggregated on a scale of 1 to 5, the smaller value represents good financial situation of the credit institution, and 5 situation worst that automatically generates remedial action by the supervisory authority .

In the UK, the Financial Services Authority (FSA) has developed a rating system called RATE that differs significantly from other systems primarily due to the disaggregation of the main activities that are carried out in a bank and aims to identify risks for each activity in part. Risks are assessed based on the following components RATE: Risk Assessment (Risk Assessment), Tools (financial levers) and Evaluation (Evaluation). For each component rated at 1-9 and finally calculate aggregate credit institution's rating system called the generic RATE.

Since 1993, Italy used a rating system approaching the CAMELS system, which is generically called PATROL. It includes five components: capital adequacy, profitability, credit quality and liquidity quality of the organization, giving them there is also values from 1 to 5; data is collected similarly to the CAMELS system. The Bank of Italy has a central banking risks are recorded loans above a certain level (about 75 thousand Euros).

Germany was achieved in 1997 a rating system called BAKred, using data reported monthly or quarterly by banks and is based on the calculation of the 47 indicators structured as follows: 19 Credit Risk 16 market risk, two risk 10 liquidity and profitability. The supervisory authority federal ensuring and monitoring from inside by representatives who are members of committees of Directors of the most important credit institutions of the country, this practice is considered unusual because they generate a potential conflict of interest, but nevertheless a similar procedure applies in Austria.

Until 1999 the Netherlands used a rating system itself, after which it moved to a different model which has 3 modules, which are based on 53 indicators. The first way involves dynamic analysis of indicators for a particular banking institution, the latter includes static comparisons with peer group banks, and the third module compares the evolution of indicators analyzed institution with developments peer group.

In Romania, the central bank adopted a rating system called CAAMPL, CAMELS inspiration, a name derived from the capital, quality of ownership, assets, management, profitability and liquidity.

CAAMPL rating system is based on six components aimed at assessing the coverage uniformly and vast performance of a credit institution under the laws and regulations in force. The six specific components analysis are: capital adequacy, quality of ownership, asset quality, management, profitability and liquidity. Each item is rated on a scale of 1 to 5, the smaller value representing the highest performance, highest performance and lowest. Capital adequacy, asset quality, profitability and liquidity analyzes based on a system of indicators for which there are five intervals of five default values and the corresponding ratings. These intervals were established value from the appropriate international standards Romanian banking system. The basis for calculating the indicators that define the four components represent the accounting and prudential reports that is sent periodically by banks. The analysis of the quality management helps to determine the risk profile of banks' policies and development strategies. Evaluation of the six components of the system CAAMPL specific performance is the essential criterion determining the rating is based on the compound, which is given a score from 1 to 5.

For the first three indicators used in analyzing banks' capital adequacy analysis was obtained Level 1 rating which means good capitalization. Social capital ratio also gets a rating of 1 degree in 2009 followed by a rating grade 2 the next four years which means adequate capitalization. In the whole period considered to obtain a cumulative rating of Grade 1 indicating a strong level of capital compared with risk profile of the banks analyzed.

Concerning the quality of banks' shareholders find that it falls within Class 1 rating which means strong support of shareholders in conjunction with the size, risk profile and complexity of banks analyzed. Significant risks are

identified, measured, monitored and controlled in an effective manner. Also, shareholders have demonstrated their ability to immediately respond to the problems effectively controlling existing and potential risks.

Regarding assets quality indicators used in analyzing the five records all their rating levels for the entire period. Thus, to obtain Level 2 rating in 2004 and in 2011 which means a satisfactory quality asset quality and credit administration practices, scale and seriousness of the classification system and other deficiencies involve a limited level of attention supervision. In 2005 and last two years of the program recorded a worsening in quality assets resulting level 3 rating which indicates the need for closer monitoring and also increase risk exposure, deteriorating asset quality, it and practice management credit is less than satisfactory. Between 2006 and 2010 the situation worsens considerably, yielding a rating of Level 4 which indicates asset quality and practice management credit deficient, uncontrolled appropriate risk on problem assets and thereby exposing the banking institution to potential losses that may threaten the viability of the bank in the sample.

Rating level given management, the fourth component of the rating is 1, indicating soundness management practices within banks randomly selected referring here to the existence of a competent staff of appropriate practices, the existence of a program of audit and control domestic according to the size and complexity of banking institutions and the existence of an efficient information system.

With respect to profitability, we find that the record rating of 3 in most years of the period taken for analysis, which shows that revenues cannot cover the full cost of operations and cannot provide capital growth and levels of resource allocation which is the general condition of existence of a banking institution. In 2009 and 2010 banks are classified with State 5 rating which means a turnover of very weak, registering losses that may pose a serious threat to the viability of the bank in the sample. In 2011 the situation is improving compared to previous years, but still remains difficult, registering a rating of grade 4 and showing insufficient income to cover the cost of operations and to maintain capital levels and adequate allocation of resources;

This year institution can be characterized by fluctuations in net income through development and significant negative trends.

For banks in the sample liquidity register the same level of rating throughout the period under review, 3, which indicates levels of liquidity or practice of fund management that needs improvement, that the banking institution has no access to money or can record significant deficiencies during the administration of funds.

Rating aggregate obtained from the analysis of the sample of banks using the method CAAMPL is level 2 for the entire period, which indicates that banks have a basic structure healthy, difficulties arise moderate that can be corrected by the Board of Directors of banks. Banks are analyzed and stable institutions capable of difficulties arising from the credit market fluctuations, compliance with the legislation and regulations in force. Also, risk management practices are satisfactory and also concern the supervisory authority is one of routine surveillance without significant problems.

Bankruptcy prediction models are known as methods for hazard assessment of financial entities, and financial theory there are three types of evaluation of this issue, namely univariate analysis, multivariate and logit.

In the period 1980-1990 was logit methods used multiple discriminate analysis detrimental, and more recently logit analysis was considered more advanced analytical tools like neural analysis. Between logit models we considered the model developed by Claude Stickney.

Stickney model involves the application of four stages: the first involves the calculation of his next seven financial indicators:

- Claims on clients / turnover with a coefficient of -0.108 correspondents;
- Claims / House and Government securities accepted for refinancing with a correction factor of 1583;
- (Short-term investments + Cash) / Total assets by a factor of -10.78;
- Current assets / Current liabilities by a factor of 3.074;
- Operating profit / (Total assets-Current Liabilities) with a coefficient of 0.486;



- Long-term Debt / (Total assets-current liabilities) with a coefficient of -4.35;

- Turnover / (Working Capital + Fixed) with a coefficient of 0.11.

On the basis of these rates of weightings corrected score is calculated

Y:

$$Y = +0, 23883 + \sum \text{Partial Coefficient } i * \text{Financial ratio } i$$

And calculate the probability of bankruptcy of banks following the algorithm:

$$P = 1 / (1 + e^Y)$$

The ratings obtained by this method are given in line with those developed by agencies Moody's and Standard & Poor's. Rating notations are partially standardized as in the evaluation process, analysts argued the need for a more pronounced differences in risk.

**Table 1: The evolution of rating and probability of bankruptcy by Stickney method in Romanian banking system**

Fiscal period	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
R1	5.4017	6.9328	8.1068	9.2690	11.0300	8.9124	8.2163	9.3168	.9014	.6692
Variable 1	0.1080	0.1080	0.1080	0.1080	0.1080	0.1080	0.1080	0.1080	.1080	.1080
Score 1	0.5834	0.7487	0.8755	1.0010	1.1912	0.9625	0.8874	1.0062	.0693	.0443
R2	2.5184	2.2226	2.4460	2.5490	2.4854	2.0727	1.7216	1.4141	.2768	.2756
Variable 2	1.5830	1.5830	1.5830	1.5830	1.5830	1.5830	1.5830	1.5830	.5830	.5830
Score 2	3.9866	3.5183	3.8720	4.0351	3.9344	3.2811	2.7253	2.2385	.0212	.0193
R3	0.1966	0.2428	0.2527	0.2207	0.2193	0.1660	0.1748	0.1806	.1886	.1279
Variable 3	10.7800	10.7800	10.7800	10.7800	10.7800	10.7800	10.7800	10.7800	0.7800	0.7800
Score 3	2.1190	2.6173	2.7246	2.3790	2.3639	1.7897	1.8843	1.9474	.0327	.3791
R4	3.3525	3.0895	3.4286	3.4223	4.9199	5.1994	4.5399	4.7543	.4999	.0886
Variable 4	3.0740	3.0740	3.0740	3.0740	3.0740	3.0740	3.0740	3.0740	.0740	.0740
Score 4	10.305	9.4972	10.539	10.520	15.123	15.983	13.955	14.614		

	7		5	1	8	0	7	8	3.8327	2.5684
R5	0.0301	0.0278	0.0198	0.0325	0.0283	0.0037	0.0054	0.0060	.0129	.0139
Variable 5	0.4860	0.4860	0.4860	0.4860	0.4860	0.4860	0.4860	0.4860	.4860	.4860
Score 5	0.0146	0.0135	0.0096	0.0158	0.0138	0.0018	0.0026	0.0029	.0063	.0068
R6	0.8508	0.8499	0.8414	0.8587	0.8563	0.8780	0.8754	0.8896	.8772	.8702
Variable 6	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	4.3500	.3500	.3500
Score 6	3.7009	3.6970	3.6602	3.7353	3.7247	3.8191	3.8080	3.8696	.8159	.7855
R7	0.1315	0.1192	0.0996	0.0881	0.0712	0.0776	0.0820	0.0678	.0627	.0639
Variable 7	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	0.1100	.1100	.1100
Score 7	0.0145	0.0131	0.0110	0.0097	0.0078	0.0085	0.0090	0.0075	.0069	.0070
<b>R= 0.23883 – R1* 0.108 – R2*1.583-R3*10.78 + R4*3.074 + R5* 0.4860 – R6* 4.35 + R7* 0.11</b>										
TOTAL SCORE	0.1837	-0.8187	-0.3334	-0.3660	4.1700	6.3797	4.9011	5.8023	.1456	.5928
Bankruptcy probability	0.4645	0.6535	0.5642	0.5704	0.0380	0.0071	0.0219	0.0110	.0182	.0277
Rating	3	4	3	3	1	1	1	1		

Source: Own calculus

Linking products processed from previous rating agencies are listed below.

**Table 9: Correlating the rating of the model Stickney**

Fiscal period	Risk grade	Moody`s Rating	Standard&Poor`s Rating
2004	3	Baa2/Baa3	BBB/BBB-
2005	4	Ba1/Ba2	BB+/BB/BB-
2006	3	Baa2/Baa3	BBB/BBB-
2007	3	Baa2/Baa3	BBB/BBB-
2008	1	A3	A-
2009	1	A3	A-
2010	1	A3	A-

2011	1	A3	A-
2012	1	A3	A-
2013	1	A3	A-

Source: Own calculus

Probability of bankruptcy risk analysis method Stickney shows that banks analyzed were recorded following risk levels: 3 in 2004, 2006 and 2007, Grade 4 and Grade 1 in 2005 in the remaining years of the period. Equivalent these degrees of risk through the agencies Moody's respectively Standard & Poor's is Baa2 / Baa3 and BBB / BBB- for the risk level 3, Ba1 / Ba2 and BB + / BB / BB- for risk level 4 respectively A3 and A- for the degree of risk 1. During the period of employment in the rating Baa2 / Baa3 and BBB / BBB- that banks had a satisfactory capacity to make payments, which are vulnerable to difficulties that may arise in the long term. In 2005, when banks were falling rating of Ba1 / Ba2 according to Moody's, respectively BB + / BB / BB- according to Standard & Poor's Agency they had temporary problems that were vulnerable to difficulties encountered in the medium term. Since 2008 the situation of banks is improving in terms of default risk that they recorded A3 A- rating, which indicates a very strong capacity to meet payments in arrears, this rating is the highest level of confidence of by rating agencies, and therefore the ability to pay interest and repayment at maturity repayment of loans are fully secured by each bank of the sample.

The rating **Basel III** is based on the provisions of the final Basel Accord, which was adopted based on three axes: the first one that presents the greatest importance, providing a methodology for calculating the minimum capital they need banking institutions; The second axis specific review process requires supervisors and banks maintaining managerial mechanism leading to internal self-assessments of exposure, and the third axis involves facilitating the marketing of the banking system and the creation of policies and practices of security and solidity.

The main purpose of this agreement is the remedy imposed rules and failures liquidity arising from the financial crisis, effects manifested mainly between 2007 and 2010. Basel III is a document entitled "Strengthening Banking System Termination" is a continuation of the document called "Development Scheme of the Basel II Framework". Their purpose was to improve skills for financial and economic shock absorption.

Basel III requires banking institutions following requirements:

- Maintain the quality of Tier 1 capital to 4.5% of its assets;
- Possession of a separate capital reserve buffer, at least 2.5% of assets;
- Possession of a separate cyclical capital buffer of up to 2.5% of the credit markets;

Other rules imposed by this agreement are: formation of provisions to reduce banking risks, submission of bank liquidity, promotes financial stability and improvements in risk management and banking transparency.

We used the research conducted and operational risk index is determined by dividing the funds allocated for operational risk (12% of total revenue) Tier 1 funds (share capital, reserves, share premium, profit etc.).

Market risk index also is another measure of risk by dividing Tier 2 extra (subordinated debt) to net exposure.

On the other hand the management of liquidity risk is an indicator that underpins confidence in the banking system as banks are credit institutions heavily indebted as the ratio of assets to Tier 1.

Rating model based on these principles has been designed following analyzes carried out on 10 banks, taking into account the numerous financial indicators reflecting financial matters impacting the future development of the business and profit. Among these indicators were selected financial liquidity and performance rates:

- $(\text{medium and long-term loans} + \text{shareholders' equity}) / \text{Investments}$  ( $\geq 1, 25$ );
- $\text{Equity} / \text{Total Liabilities}$  - ( $\geq 15\%$ );
- $\text{Total expenses} / \text{Turnover}$  - ( $\leq 5\%$ );

- Cash flow / Total assets - ( $\geq 3.5\%$ );

Each indicator is assigned a score based on the values obtained and are aggregated at the end. Based on cumulative scores fall into one of the following categories of risk:

▶ Minimum risk- 12 points - Rating AAA: in this situation the financial performance of the banking institution are very good, the risk is minimal and provides maintenance and financial performance perspective at a high level.

- Minimum risk perspective growth - between 12 and 11.50 points - Rating AA +

- Minimum risk outlook negative - between 11 and 11.49 points - Rating AA -

▶ Low risk- 11 points - Rating AA: This rating reflects the good financial performance, risk is reduced, but the results are fixed in the short term.

▶ Low to average risk- 10 points - Rating A: Banking institution's financial performance is above average, satisfactory and ranges from low to medium risk.

- Reduced risk-environment perspective growth - between 12 and 11.50 points - Rating A +

- Low to medium risk outlook negative - between 11 and 11.49 points - Rating A -

▶ Environment risk - 9 points - BBB Rating: performance is at a medium level compared to the optimal range.

- Medium risk outlook increasing - between 12 and 11.50 points - Rating BB +

- Medium risk outlook negative - between 11 and 11.49 points - Rating BB -

▶ Medium to high risk - 8 points - Rating BB: financial performance of the financial institution are below average compared to the optimum level.

▶ High risk - 7 points - Rating B: financial performance is weak, unsatisfactory.

► Bankruptcy - 6 points - Rating CCC: very poor financial performance and bankruptcy is imminent.

For instance Fitch, awarded Transylvania Bank (including the sample) rating of BB (speculative) long-term and B short-term end of 2013, which indicates is satisfactory to meet the payments, however, indicate a vulnerability long-term. The outlook for long-term foreign funding of Transylvania Bank is B rating on short-term investments; Fitch notes a relative capacity to meet payments due. Agency also finds a stable outlook to the rating of the bank is not likely to change, and the Bank's financial situation is stable which does not require supervision.

The above data shows that compared to the general risk index operational risk has a significant weight and an upward trend from year to year until 2011, followed a downward curve, but overall records a halving of values compared to the base year, 2004. The rate of overdue and doubtful loans in total assets recorded an oscillating trend from year to year, and market risk index reflects insignificant compared to other risks mentioned indications.

**Table 10 The evolution of the rating using Basel III method in Romanian banking system**

<b>Indicators/ Fiscal period</b>	<b>200 4</b>	<b>200 5</b>	<b>200 6</b>	<b>200 7</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>201 2</b>	<b>201 3</b>
Indicator 1	1.15 24	1.08 03	1.21 31	1.15 39	1.19 85	1.23 25	1.13 95	1.09 84	1.59 24	1.61 20
Points 1	2	2	2	2	2	2	2	2	3	3
Indicator 2	11.5 9%	9.39 %	8.68 %	8.72 %	10.0 7%	9.12 %	9.24 %	8.27 %	9.11 %	9.61 %
Points 2	1	2	2	2	1	2	2	2	2	2
Indicator 3	87.9 6%	89.3 4%	95.9 9%	94.0 7%	195. 34%	180. 05%	216. 80%	238. 50%	84.8 2%	81.6 2%
Points 3	2	2	2	2	2	2	2	2	2	2
Indicator 4	18.8 8%	23.1 4%	24.2 9%	21.3 1%	21.6 2%	16.1 3%	16.8 6%	17.5 2%	18.8 6%	12.7 9%
Points 4	3	3	3	3	3	3	3	3	3	3
Total Score	8	9	9	9	8	9	9	9	10	10

<b>Aggregate rating</b>	<b>BB</b>	<b>BB B</b>	<b>BB B</b>	<b>BB B</b>	<b>BB</b>	<b>BBB</b>	<b>BBB</b>	<b>BBB</b>	<b>A</b>	<b>A</b>
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Source: Own calculus

After applying the Basel III Model for the group of banks led analyzed BBB rating in most years of the period under review (2005-2007 periods respectively 2009-2011), BB rating in 2004 and 2008 respectively Rating in the last two years of the . BBB rating indicates that the banks' financial performance is analyzed at an average level to the optimum range, the risk being optimal. BB rating indicates a low level of performance, below average, and confirmed the negative results registered in this period, the risk of being on an upward trend between average and high. A rating indicates the existence of above average financial performance that is satisfactory risk levels fluctuating between low and medium.

#### 4. References

- Arghyrou, M.G., Tsoukalas, J.D., The Greek Debt Crisis: Likely Causes, Mechanics and Outcomes, *The World Economy*, Volume 34, Issue 2, pages 173–191, February 2011
- Bătrâncea, L.M., Bătrâncea, I., Moscviciov, A., The Roots of the World Financial Crisis, *Analele Universității Oradea*, Tom XVIII, Vol.III, ISSN: 1582 – 5450, 2009, p.58-64
- Bătrâncea, I., Moscviciov, A., Sabău, C., Bătrâncea, L.M., Banking Crisis: Causes, Characteristic and Solutions, *Proceedings of the DIEM 2013 “Scientific Conference on Innovative Approaches to the Contemporary Economic Problems”*, ISBN: 978-953-7153-30-4, p.16-29
- Bird, M., Here's what happens if Greece is forced out of the euro, *The Business Insider*. 16 february 2015
- Johnston, I., Greece crisis: Alexis Tsipras announces referendum on creditor's 'unbearable' austerity demands, *The Independent*, 26 June 2015
- Kashyap, A., *A Primer on the Greek Crisis: the things you need to know from the start until now*, University of Chicago, 2015
- Mink, M., Haan de, J., Contagion during Greek sovereign debt crisis, *Journal of International Money and Finance*, volume 34, april 2013, pp.102 - 113
- O'Brien, M., Greece crisis explained: 7 key points on what happens now the Greeks have voted 'No', *The Independent*. 6 iulie 2015
- Phipps, C., Greek debt crisis: the key points of Athens bank controls, *The Guardian* 29 June 2015
- Santis, A., De. R., *The Euro Area Sovereign Debt Crisis: Safe Haven, Credit Rating Agencies and the Spread of the Fever from Greece, Ireland and Portugal*, ECB, Working Paper no.1419, January 24, 2012
- <https://www.transparency.org/cpi2014/results>
- <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&Type=TABLE>
- <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>