

## **THE EVALUATION OF A GROUP OF BANKS RATING IN ROMANIA. A COMPARATIVE ANALYSIS**

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### **Abstract**

*Because the credit institution generally regarded, operating in specific market conditions it is subject to an accumulation of risks, so that in practice were constructed banking bank rating systems, the most popular being: CAMEL system, and uniform rating system in Romania, known as CAAMPL. In the paper the authors made a comparative analysis between two different modalities of banking rating namely CAAMPL and Stickney systems, and correlate the results with rating agencies.*

**Key words:** *liquidity, performance, financial ratios, rating, cash-flow, assets*

**JEL:** *G21*

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### **1. Literature review**

Each bank is assessed in terms of a number of six aspects considered to have its activity and concern, in Romanian, the following: capital, assets, management, profitability, liquidity and sensitivity to market risk. The ratings are from one to five, indicating a value less healthy financial situation, they are calculated both on each component and aggregate.

A credit rating is an evaluation of the [credit worthiness](#) of a [debtor](#), especially a [business \(company\)](#) or a government, but not individual consumers. The evaluation is made by a [credit rating agency](#) of the debtor's ability to pay back the debt and the likelihood of [default](#).<sup>[3]</sup> Evaluations of

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individuals' credit worthiness are known as credit reporting and done by [credit bureaus](#), or [consumer credit reporting agencies](#), which issue [credit scores](#). (Wikipedia, 2015)

Credit ratings are determined by credit ratings agencies. The credit rating represents the credit rating agency's evaluation of qualitative and quantitative information for a company or government; including non-public information obtained by the credit rating agencies' analysts. (Wikipedia, 2015)

The credit rating is used by individuals and entities that purchase the bonds issued by companies and governments to determine the likelihood that the government will pay its bond obligations. (Wikipedia, 2015)

Bankruptcy prediction models are generally known as the ways of the "dangers" of financial entities. In financial theory are discussed three types of evaluation of the financial issues namely: univariate analysis, multivariate analysis and logit analysis. Univariate analysis assumes that a single variable can be used in the prediction of a given objective. (Cook, Nelson, 1998)

The most commonly used model was proposed by Edward Altman, professor of finance at the Stern School of Business at New York University ([www.equity.stern.nyu/](http://www.equity.stern.nyu/)).

More and more authors tried to build rating models for banking systems. Thus Michel Crouhy, Dan Galai, Robert Mark (Crouhy, Galai, Mark, 2000, p.59-117), describe the rating systems of the two main credit rating agencies, Standard & Poor's and Moody's and then show how an internal rating system in a bank can be organized in order to rate creditors systematically. We suggest adopting a two-tier rating system. First, an obligor rating that can be easily mapped to a default probability bucket. Second, a facility rating that determines the loss parameters in case of default, such as (i) "loss given default" (LGD), which depends on the seniority of the facility and the quality of the guarantees, and (ii) "usage given default" (UGD) for loan commitments, which depends on the nature of the commitment and the rating history of the borrower.

## **2. Method and results**

Analysis of the group of banks Unicredit Tiriac Bank, Volksbank and BCR was based on CAAMPL model and Stickney.

**A. CAAMPL system** came from **CAMEL** system is based on evaluation of six components (capital adequacy, quality of ownership, asset quality, management, profitability, liquidity) reflecting a uniform and

comprehensive manner the performance of a bank in accordance with laws and regulations.

Rating analysis using CAAMPL system was done by evaluating and calculating each component of the system, using the data contained in the balance sheets of the six years studied, and other information with qualitative character: Capital adequacy (C), Quality of ownership (A), Assets quality (A), Bank management (M), Profitability (P) and Liquidity (L).

### **Capital adequacy (C)**

**Table 1: Capital adequacy**

<b>C. Capital adequacy</b>						
	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Solvency Ratio 1</b>	23,99%	16,55%	17,21%	21,51%	24,36%	35,55%
<b>Rating</b>	1	1	1	1	1	1
<b>Solvency Ratio 2</b>	15,64%	11,01%	10,41%	11,77%	12,15%	10,64%
<b>Rating</b>	1	1	1	1	1	1
<b>Total Equity Ratio</b>	12,25%	8,21%	7,95%	8,66%	9,34%	8,18%
<b>Rating</b>	1	1	1	1	1	1
<b>Equity Ratio</b>	290,16%	462,62%	517,21%	493,47%	511,47%	319,64%
<b>Rating</b>	1	1	1	1	1	1
<b>Capital Adequacy Rating</b>	1	1	1	1	1	1

Source: Own calculations based on the financial statements analyzed

From the point of view of capital adequacy of banks group maintained a strong level of capital relative to its risk profile. Throughout the analyzed period (2006- 2011) all the analyzed indicators received 1 ratings, resulting that the group is well capitalized banks.

### **Quality of ownership (A)**

**Table 2: Quality of ownership**

<b>A. Ownership</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>TOTAL Ownership Rating</b>	1	1	1	1	1	1

Source: Own calculations based on financial statements of banks analyzed

Analyzing the capacity and performance of shareholders, assessed in terms of support and accountability to shareholders, we have considered from the point of view of the shareholders of the three banks fall into one rating class.

### **Assets quality (A)**

Bank management reflects the potential risk that can generate credits by the banking institution and the inherent risk of other assets and off-balance sheet operations.

**Table 3: Assets Quality**

<b>A. Assets Quality</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>General Risk Ratio</b>	67,36 %	67,70 %	71,5 5%	71,6 9%	74,6 1%	74,70 %
<b>Rating</b>	4	4	3	3	4	3
<b>Doubtful Debts to Total Loans Outstanding Ratio</b>	1,04 %	3,48 %	3,09 %	6,65 %	10,3 9%	2,95%
<b>Rating</b>	1	2	2	4	5	2
<b>Overdue and Doubtful debts to Total Assets Ratio</b>	0,59 %	2,10 %	2,03 %	4,20 %	6,78 %	1,79%
<b>Rating</b>	1	2	2	3	4	1
<b>Loans to Clients to Total Assets Ratio</b>	56,94 %	60,17 %	65,6 9%	63,1 7%	65,1 8%	60,66 %
<b>Rating</b>	3	4	5	4	5	4
<b>Loans to Clients to Total sources Ratio</b>	64,88 %	65,56 %	71,3 6%	69,1 6%	71,9 0%	66,07 %
<b>Rating</b>	2	3	4	3	4	3
<b>Assets Quality Rating</b>	2	3	3	3	4	3

Source: Own calculations based on financial statements of banks analyzed

The General Risk Ratio presents an unfavorable risk throughout the survey period because its value varying between 3 and 4 rating, which entails a higher average exposure to credit risk.

The Doubtful Debts to Total Loans Outstanding Ratio achieve a rating of 5 in 2010, but in 2011, evolving favorable rate for banks and reaches a rating 2.

Overdue and Doubtful debts to Total Assets Ratio shows a rating variable worst result 4 in 2010, but the situation improved considerably in 2011 when the rating is 1.

From the analysis we observe that the asset quality of banks group has an average rating of 3, which indicates a weak satisfactory asset quality and credit administration practices.

### **Bank Management (M)**

Management is that process by which coordinates are guided, planning and control activities in an organization so as to ensure its goals with maximum efficiency.

**Table 4: Bank Management**

	<b>M. MANAGEMENT</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
	<b>Total Management Rating</b>	1	2	2	1	1	1

Source: Own calculations based on financial statements of banks analyzed

### **Profitability (P)**

**Table 5: Profitability**

	<b>P. PROFITABILITY</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
	<b>Return On Assets (ROA)</b>	1,16 %	0,93%	1,42%	2,21%	1,53%	0,18 %
	<b>Rating</b>	4	4	4	4	4	5
	<b>Return On Equity (ROE)</b>	9,48 %	11,39 %	17,82 %	25,55 %	16,33 %	2,22 %
	<b>Rating</b>	2	1	1	1	1	5
	<b>Profitability Rating</b>	3	3	3	3	3	5

Source: Own calculations based on financial statements of banks analyzed

From the table it can be seen unfavorable situation indicators regarding Return On Assets and Return On Equity for the period 2006 - 2011, leading to their negative peak in 2011, which led to the granting of five rating

levels indicating a volume of income deficit, which induce a serious threat to its viability through the erosion of capital.

**Liquidity (L)**

**Table 6: Liquidity**

<b>L. LIQUIDITY</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Current Liquidity Ratio</b>	1,18	1,08	1,03	1,04	1,07	1,05
<b>Rating</b>	2	2	2	2	2	2
<b>Quick Ratio</b>	31,52 %	30,67 %	26,91 %	21,28 %	17,27 %	16,57 %
<b>Rating</b>	4	4	5	5	5	5
<b>Loans to Customers in total Deposits from Customers Ratio</b>	81,98 %	75,07 %	79,31 %	78,31 %	82,24 %	75,87 %
<b>Rating</b>	1	1	1	1	1	1
<b>Liquidity Rating</b>	2	2	3	3	3	3

Source: Own calculations based on financial statements of banks analyzed

Current liquidity ratio remained at around 1.07, which resulted in a rating 2 almost all the analyzed period. Quick ratio stood at a level below 30% between 2007-2011 and thus received an unfavorable rating: 5. The indicator has received a very good rating 1 Loans to Customers was in total Deposits from Customers Ratio, which was maintained throughout the period. The total liquidity rating was 3 whole period and indicates liquidity levels or funds management practices that require improvement.

The final step in the analysis of the bank's CAAMPL analysis is the establishment of a final score rating by identifying a compound so that the six indicators are classified into two categories as follows: a qualitative (IC1) shareholder quality and quality management; a quantitative (IC2) capital adequacy, asset quality, profitability and liquidity.

Based on the empirical results of practical modeling of rating systems, the weight given to the two elements in final rating system is as follows:

$$\text{Compound Rating} = 30\% * \text{Rating (IC1)} + 70\% * \text{Rating (IC2)}.$$

Rating quantitative indicators determined by granting equal weights of individual ratings of the four performance indicators as follows:

Rating (IC2) = 25% \* Rating (C) + 25% \* Rating (A) + 25% \* Rating (P) + 25% \* Rating (L).

**Table 7: Compound Rating**

COMPOUND RATING	2006	2007	2008	2009	2010	2011
<b>Total Compound Rating</b>	2	2	2	2	2	3

Source: Own calculations based on financial statements of banks analyzed

This group analyzed at three banks Unicredit Tiriac Bank, Volksbank and easy BCR depreciated class composite rating of Class 2 to Class 3 in 2011.

### ***B. Logit analysis rating method – Stickney Model***

Bankruptcy prediction models are generally known as a way of assessing the financial dangers of entities. In financial theory are discussed three types of evaluation of the financial issues namely: univariate analysis, multivariate analysis and logit analysis.

[Robert Craig West](#) explores a new approach to early warning systems for commercial banks. Factor analysis and logit estimation are used to measure the condition of individual institutions and to assign each of them a probability of being a problem bank. The model employs widely used financial ratios and information taken from bank examinations. The factors produced by the model for use in the logit estimation are very similar to the CAMEL or CAAMPL rating system used by bank examiners. Empirical results show that the combination of factor analysis and logit estimation is a promising method of evaluating bank condition. ([West](#), 1985, p. 253–266)

Based on the model Altman, Cristine Zavgren (Zavgren, 1985, p.19-46) brought improvements to bank failure prediction model was further developed by William Andrew Lo (Lo, 1986, p.151-179) and Claude Paul Stickney (Stickney, 1996, p.510). This is the third way of prediction of bankruptcy, being called logit model.

In the 1980s and 1990s, the trend has been to the detriment of logit models using multiple discriminant analysis. (Stickney, 1996, p.510) More recently logit analysis was considered more as an advanced analytical tool like neural network, being found in the recent work of professors Edward Altman, Marco and Franco Giancarlo Varetto. (Marco, Varetto, 1994, p.505-530)

Applying this model involves four steps are:

- seven financial indicators are calculated according to the table:

**Table 8: Logit Ratios**

Financial Ratios	COEFICIENȚI
Constant	+ 0.23883
Receivables /Turnover	- 0.108
Receivables/ Cash in hand and Government securities accepted for refinancing	- 1.583
(Cash + Short term investments)/Total Assets	- 10.78
Current Assets/Current Liabilities	+ 3.074
Profit from operation/(Total Assets – Current Liabilities)	+ 0.486
Long term debts/( Total Assets – Current Debts)	- 4.35
Turnover/(Working capital + Fixed Assets)	+ 0.11
y =	$\sum$ (Coefficient * Financial Ratio)
Bankruptcy probability =	$1/(1 + ey)$

Source: The Stickney Model

- In the second stage, each rate is multiplied by a coefficient that can take positive or negative values set in the model.
- In the third stage partial products are summed.
- Calculate the probability of bankruptcy as the inverse function  $(1 + e^y)$ .
- The class rating, depending on the rate of bankruptcy.

Bankruptcy rate for banks was considered the calculated skilled in the art, as shown in the following table:

**Table 9: Bankruptcy rate for banks**

Risk grade	Values of bankruptcy	The correlation with Rating Agencies	
		Moody's	Standard&Poor's
1	0,0-0,15	A3	A-
2	0,15-0.3	Baa1/Baa2	BBB+/BBB

<b>3</b>	0,3-0,6	Baa2/Baa3	BBB/BBB-
<b>4</b>	0,6-1,2	Ba1/Ba2	BB+/BB/BB-
<b>5</b>	1,2-2,5	Ba3	B+/B
<b>6</b>	2.5-5	B1	B-
<b>7</b>	5-10	B2/B3	CCC
<b>8</b>	Peste 10	CaaCa/C	CC/C

Source: E. Cade, Managing Banking Risks (Cade)

In terms of risk classes and ratings, regulations issued in US the "Controller of Currency" generally states that investment risk capital market, ie credit risk bonds or bonds are classified into four categories symbolized as "AAA", "AA", "A" and "BBB" known as investment grade rating (IG). (www.en.wikipedia.org)

Below we present the results obtained for the analyzed data for the three banks: UniCredit Tiriac Bank, Volksbank and BCR during 2006-2011 by applying the model Stickney.

**Table 10: Data results**

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Receivables</b>	9.053.849.261	55.319.706.444	70.013.637.283	72.519.138.171	74.297.004.505	72.017.695.863
<b>Turnover</b>	532.629.666	4.136.381.926	5.404.167.952	4.095.649.759	3.497.397.882	4.132.054.855
<b>R1</b>	17,00	13,37	12,96	17,71	21,24	17,43
<b>Variable</b>	0,1080	0,1080	0,1080	0,1080	0,1080	0,1080
<b>Correct Score</b>	1,8360	1,4440	1,3997	1,9127	2,2939	1,8824
<b>Receivables</b>	9.053.849.261	55.319.706.444	70.013.637.283	72.519.138.171	74.297.004.505	72.017.695.863
<b>Cash in hand and Government securities accepted for refinancing</b>	3.874.321.420	24.153.834.410	26.166.195.504	23.455.291.664	22.127.084.181	26.974.941.628
<b>R2</b>	2,34	2,29	2,68	3,09	3,36	2,67
<b>Variable</b>	1,5830	1,5830	1,5830	1,5830	1,5830	1,5830

<b>Correct Score</b>	3,7042	3,6251	4,2424	4,8915	5,3189	4,2266
<b>Cash in hand + Short term investments</b>	3.745.318.347	24.165.300.298	25.582.449.463	21.019.858.299	17.021.172.186	17.095.335.838
<b>Total Assets</b>	13.531.276.245	85.239.964.945	102.635.561.735	107.009.661.219	107.367.260.428	112.019.905.138
<b>R3</b>	0,28	0,28	0,25	0,20	0,16	0,15
<b>Variable</b>	10,7800	10,7800	10,7800	10,7800	10,7800	10,7800
<b>Correct Score</b>	3,0184	3,0184	2,6950	2,1560	1,7248	1,6170
<b>Cash + Short term investment</b>	12.799.167.608	79.485.006.742	95.596.086.746	93.538.996.470	91.318.176.691	89.113.031.701
<b>Current Debts</b>	3.335.479.530	16.320.315.866	21.053.964.791	17.926.213.306	22.251.371.017	21.979.200.680
<b>R4</b>	3,84	4,87	4,54	5,22	4,10	4,05
<b>Variable</b>	3,0740	3,0740	3,0740	3,0740	3,0740	3,0740
<b>Correct Score</b>	11,8042	14,9704	13,9560	16,0463	12,6034	12,4497
<b>Net profit</b>	157.181.187	796.767.489	1.454.230.847	2.368.362.588	1.638.200.733	(203.165.691)
<b>Total Assets-Current Debts</b>	10.195.796.715	68.919.649.079	81.581.596.944	89.083.447.913	85.115.889.411	90.040.704.458
<b>R5</b>	0,02	0,01	0,02	0,03	0,02	0,00
<b>Variable</b>	0,4860	0,4860	0,4860	0,4860	0,4860	0,4860
<b>Correct Score</b>	0,0097	0,0049	0,0097	0,0146	0,0097	0,0000
<b>Long term debts</b>	7.922.768.620	60.818.849.457	70.886.016.316	78.241.438.973	71.787.877.525	77.676.900.717
<b>Total Assets-Current Debts</b>	10.195.796.715	68.919.649.079	81.581.596.944	89.083.447.913	85.115.889.411	90.040.704.458
<b>R6</b>	0,78	0,88	0,87	0,88	0,84	0,86
<b>Variable</b>	4,3500	4,3500	4,3500	4,3500	4,3500	4,3500
<b>Correct Score</b>	3,3930	3,8280	3,7845	3,8280	3,6540	3,7410
<b>Turnover</b>	532.629.666	4.136.381.926	5.404.167.952	4.095.649.759	3.497.397.882	4.132.054.855
<b>Working</b>	10.195.796.715	68.919.649.079	81.581.596.944	89.083.447.913	85.115.889.411	90.040.704.458

<b>capital + Fixed Assets</b>	5	9	4	13	1	8
<b>R7</b>	0,05	0,06	0,07	0,05	0,04	0,05
<b>Variable</b>	0,1100	0,1100	0,1100	0,1100	0,1100	0,1100
<b>Correct Score</b>	0,0055	0,0066	0,0077	0,0055	0,0044	0,0055
<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>	x	x	x	x	x	x
<b>TOTAL SCOR</b>	0,1066	3,3052	2,0906	3,5170	-0,1353 BBB/BBB-	1,2270
<b>Bankruptcy probability</b>	0,47936	0,07171	0,16525	0,06153	0,52618	0,27876
<b>Rating</b>	3	1	2	1	3	2
<b>Moody's</b>	Baa2/Baa3	Ba1/Ba2	Baa1/Baa2	A3	Baa2/Baa3	Baa1/Baa2
<b>Standard &amp; Poor's</b>	BBB/BBB-	BB+/BB/BB-	BBB+/BBB	A-	BBB/BBB-	BBB+/BBB

Source: Own calculations based on financial statements of banks analyzed

From the analysis above table we can see that the degree of risk of the three banks averaged over the period under review falls in Group 2, which is a good performance with slight deficiencies that can be corrected. Correlating data obtained with the rating systems Mood'y and Standard & Poor's, it can be seen that the rating generally accepted is rated 3 (Ba1 for Mood'y that BB + for Standard & Poor's), which means system compatibility Stickney systems of rating agencies established. If we consider the CAAMPL system built from NBR CAAMPL system, we see that overall rating is 2 which corresponds to Ba1 ratings to BB + respectively Mood'y for Standard & Poor's.

### 3. Conclusions

In banking economy an important role in market developments in the credit institution represents its rating. The bank's rating is assessed using established systems such as CAMEL or CAAMPL or using statistical models or Stickney Altman, the results are appropriated and suggests that the bank has

good management or less efficient depending on who can't develop its business.

Finally consider that the rating remains a sore point in banking which ultimately depend on the credibility of the credit institution to the investors in the capital market.

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