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**Article**

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# CREDIT RISK ASSESSMENT IN THE ROMANIAN BANKING SYSTEM. EVIDENCE FROM THE RECENT FINANCIAL CRISIS<sup>1</sup>

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**Abstract:** *The financial crisis followed by the recession has adversely affected the quality of Romanian banking assets. The aim of this paper is to point out the implications of credit risk in the Romanian banking system following the accelerate dynamics of credit activity before the financial crisis and the effects vs. solutions proposed and implemented in recent years. Structured on four parts, the study presents the recent contributions in the crisis-lending relationship, the main features of the Romanian banking system, the evaluation of credit risk in terms of numbers, facts, actions and a short analysis of the correlation between credit indicators (consumer credit, credit risk ratio, medium exchange rate and the number of employees in the economy). To conclude, we propose to define the key points of the future Romanian banking activity.*

**Keywords:** credit risk, financial crisis, Romanian banking system.

**JEL Classification:** G01, G21, G32

## INTRODUCTION

The recent experiences revealed the weaknesses of the banking systems associated with an increased risk-taking attitude. This study points out the coordinates of credit risk and the aggregate effects in the lending activity. The economic literature and practice confirm the connections between credit growth and the fragility of the banking systems. The analyses highlight the major influences in the crisis-lending relationship. In the second part we present the characteristics of the Romanian banking system: the structure, the financial position and the institutional environment.

In the third part we analyze the credit portfolio of the Romanian banking system in terms of quality, the role of the central bank, and the implications of the financial crisis on the local market. The client's profile changed during recent years and we proposed to evaluate the impact of the social measures of recovery on credit activity results. In the fourth part of this paper we focus on the connections between consumer credit, credit risk ratio, medium exchange rate and the number of

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employees in the economy. The evolutions are explained by the measures implemented on the local market and the nature of the connections reveals the paradox.

## **1. CRISIS vs. LENDING. A LITERATURE REVIEW.**

The particularities of this financial crisis reveal the great impact and effects in developed economies, the use of various types of assets and liabilities, fiscal packages and “shadow” processes.

According to Dell’Ariccia, Detragiache and Rajan (2008), during a financial crisis, the banking sector deals with a down-grade in lending activity and the economy assists at a reduction of GDP. External financing is vital for some sectors and usually there is a direct relationship between banking activity and the economic activity. Mendoza and Terrones (2008) emphasize the importance of lending booms in terms of identification and measurement. They argue that in developed countries lending boom is high, not every case leads to financial crisis and in emerging economies lending boom comes after capital inflows not after financial reforms or productivity advantages.

In 2009, Hume and Sentence sustain that lending boom had the same trend with inflation. An important volume of savings, monetary policy directions and low levels of macroeconomic risks perception ask for more credits. Isărescu (2009), the governor of National Bank of Romania declared that increasing liquidity led to a risk-taking attitude, massive assets securitization, with gaps in the national balance sheets. As a response to the crisis, the banks change the loans price in order to cover the losses. Prudential behavior reflects into a higher price for the new loans (Santos, 2009). On the other hand, financial innovation and deregulation opened a new line for lending expansion and resized the role of credit on macroeconomic level (Taylor, 2009). An analysis on 80 countries shows that lending boom before a crisis and the reduction of GDP in the main partners countries have a great influence on lending activity after the manifestation of the crisis. Financial depth and financial integration are relevant variables in Aisen and Franken (2010) analysis as well as anti-cyclical monetary policy and liquidity. Changes in credit standards as pure effects of credit supply have major economic effects on real GDP and on total lending capacity (Bassett et al., 2010).

The economists from IMF and ECB (2010) sustain that deterioration of banking credit portfolios is the result of economic recession, increasing unemployment, high levels of interest rates, financial disintermediation and national currencies depreciation.

The crisis revealed significant deficiencies in credit risk management. Redefining the principles is vital for strengthening the banking system and correct information is the key to identify, evaluate and monitor risks. The interrelation between crisis and lending affects the real economy, the structural processes and the market perceptions. The future is uncertain, the challenges are still present and the solutions seem to be not enough - what is to be done?

## **2. THE MAIN FEATURES OF THE ROMANIAN BANKING SYSTEM**

In the last 15 years, the reforms of the Romanian banking system were dictated by three major events:

- ✓ Starting with 1999, the privatization of Romanian banks has begun and National Bank of Romania initiated a restructuring process in order to prevent the systemic risk; (Isărescu, 2004);
- ✓ The year 2007 announced the new position of Romania in the European Union: as a member of this community, the obligations reflected also to the banking system;
- ✓ The actual financial crisis determined a rethinking of the banking strategies and highlighted the active role of the central bank.

The main objective of the reform included quality improvement, new supervision framework, the implementation of a banking rating system and maintaining a safe authorization process policy of the new institutions. In 2004, the Romanian banking system was characterized by an increasing trend of assets superior to economic growth rate, high profits and an intense retail lending activity.

Romania's integration in the European Union facilitated the development of the banking system: acquisitions and mergers led to appearance of new banking entities, diversification of banking products and services was dictated by the environment competitiveness and the presence of the foreign capital assured the access to external financing and efficiency in managing risks.

A structural analysis of the banking system shows that in the analyzed period, the total number of the credit institutions is relatively stable, varying between 39 and 43. The major presence of the foreign capital and foreign banks shows the potential of the investment environment and the openness level of the country.

In 2009, 2010 and 2011, the Austrian and Greek banks had more than 50% assets market share in the Romanian banking system. In early 2010, there were significant changes compared to June 2009, in terms of capital origin - the Greek credit institutions retaining the first position.

**Table 1- Indicators of the Romanian banking system**

Indicator	2004	2005	2006	2007	2008	2009	2010	S12011
Number of credit institutions	40	40	39	42	43	42	42	42
Number of banks with majority private capital	38	38	37	40	41	40	40	40
Number of banks with majority foreign capital, of which:	30	30	33	36	37	35	35	35
Foreign banks branches	7	6	7	10	10	10	9	9
<b>Number of banks</b>	<b>39</b>	<b>39</b>	<b>38</b>	<b>41</b>	<b>42</b>	<b>41</b>	<b>41</b>	<b>41</b>
Number of local units	3031	3533	4470	6340	7375	6425	6169	n.a
Number of employees	49702	52452	58536	66039	71622	67898	66753	n.a
The share of private banks in total assets	93,1	94	94,5	94,7	94,6	92,5	92,4	93,1
The share of foreign banks in total assets	62,1	62,2	88,6	88	88,2	85,3	85	85,4
Assets of the first 5 banks/Total assets (%)	59,5	59,4	60,1	56,3	54,3	52,4	52,7	53,6
Herfindhal-Hirschman Index (HHI)	1120	1124	1171	1046	926	857	871	895
Solvency ratio (>8%)	20,64	21,07	18,12	13,78	13,76	14,67	15,02	14,19
Liquidity ratio	2,28	2,59	2,31	2,13	2,47	1,38	1,35	1,37

Source: Data collected from National Bank of Romania, Monthly Bulletins (Dec 2004-Dec 2010, June 2011 ), Financial stability report, 2011, [www.bnro.ro](http://www.bnro.ro), \*\*\* ECB: Structural Indicators for the EU Banking sector, <http://www.ecb.int/pub/pdf/other/structuralindicatorseubankingsector201001en.pdf>

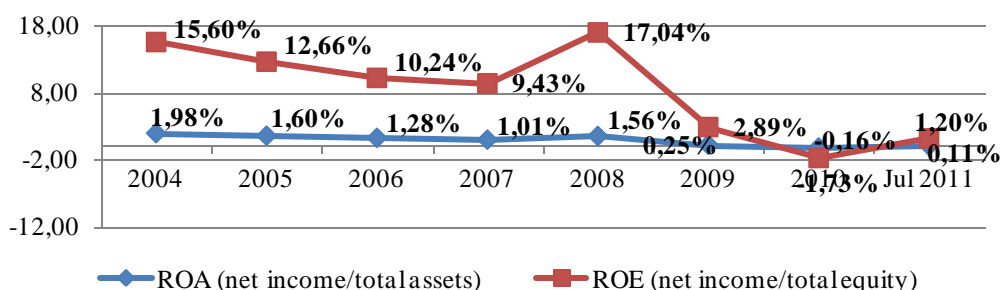
The recession determined a strategy based on cost cuts manifested through the reduction of local branches and employees. Assets concentration level decreased from 2006 to 2009, the value of HHI in 2011 places Romania under the average of the European Union (1102 points).

The Romanian banking system remains well capitalized, by the end of 2008 the financial crisis put pressure on the external liquidity channel, the liquidity ratio went down to 1,37% in June 2011. But, the financial assistance of the parent-banks continued assuring more than 95% of the external financing in 2010. Between 2004 and 2011, the solvability ratio was over the minimum 8% imposed in the European Union; this comfortable level providing a solid framework for Basel III implementation.

In 2010, the profit of the banking system went down because of massive provisions expenses and operational profit reduction especially for small and middle banks (the market share of the banks which registered losses was 21,9% in December 2010). Twenty credit institution- large and

middle banks reported profit at the end of 2010 based on operational costs efficiency and credit portfolio restructuring.

**Figure 1 - Profitability indicators of the Romanian banking system**



Source: \*\*\* National Bank of Romania, Financial Stability Report 2011, [www.bnro.ro](http://www.bnro.ro)

According to the National Bank of Romania, in the third quarter of 2011, the Romanian banking system reported losses. At the end of September 2011, ROA was -0,31% and ROE was -3,37%, values explained by the uncertainty present on both external and internal markets associated with low client profiles and massive provisions.

### 3. CREDIT RISK: INDICATORS AND TRENDS

In the context of the financial crisis, the banking systems from Central and Eastern Europe suffer from multiple dimensions of distress:

- An accelerate dynamic of credit activity designed to increase the portfolios and profits rather than the quality of clients turned into a real source of risks associated with real losses;
- In an environment under reforms, uncertainty and panics generated trust issues and chaotic clients' behavior;
- The instability of the western banking systems in terms of debts 'structure (an important volume of governmental bonds from Euro-zone) might create liquidity problems for subsidiaries;
- In the long-run, the structure of the local banking ownership can increase the volatility and vulnerability to shocks so that diversification is required.

The credit portfolios in Central and Eastern European banking systems deteriorated from 2007 to 2010 (as in Table 2). Considering the non-performing loans to total loan ratio after Ukraine, Lithuania and Latvia, the Romanian banking system is one of the most affected.

The actual financial crisis had a trans-regional impact and the global variables influenced the credit evolution more than the local factors (Eller, Frömmel and Srzentic, 2011).

The Romanian banking sector was adequately capitalized, but credit risk intensified in the context of economic recession and increasing unemployment. The trend of non-performing loans called for a close monitoring and further provision efforts.

**Table 2 - Evolution of non-performing loans to total loans (%) in Central and Eastern European countries between 2005 and 2010**

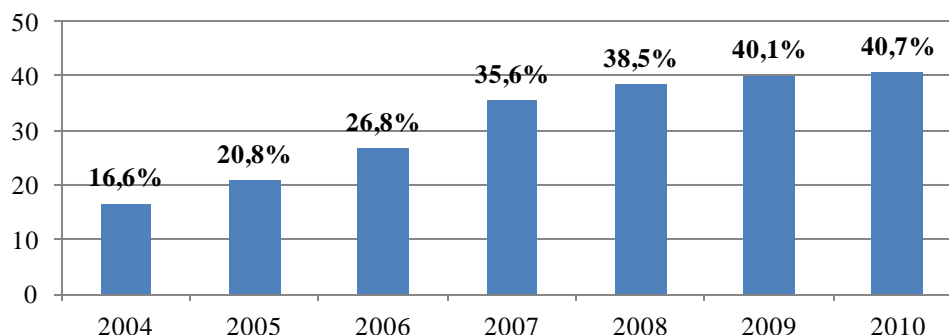
Country	2005	2006	2007	2008	2009	2010
Albania	2,3	3,1	3,4	6,6	10,5	12,0
Bosnia and Herzegovina	5,3	4,0	3,0	3,1	5,9	7,1
Belarus	3,1	2,8	1,9	1,7	4,2	4,9
Bulgaria	2,2	2,2	2,1	2,5	6,4	7,8
Czech Republic	3,9	3,7	2,8	2,8	4,6	4,9
Croatia	6,2	5,2	4,8	4,9	7,8	8,8
Estonia	0,2	0,2	0,4	1,9	5,2	5,6
Latvia	0,7	0,5	0,8	3,6	16,4	17,9
Lithuania	0,6	1,0	1,0	4,6	19,3	19,2
Macedonia	15,0	11,2	7,5	6,8	8,9	9,9
Montenegro	5,3	2,9	3,2	7,2	13,5	14,9
Hungary	2,3	2,6	2,3	3,0	6,7	7,8
Poland	11,0	7,4	5,2	4,5	7,6	8,2
<b>Romania</b>	<b>2,6</b>	<b>2,8</b>	<b>4,0</b>	<b>6,5</b>	<b>15,3</b>	<b>17,5 (4th)</b>
Russia	2,6	2,4	2,5	3,8	9,7	9,5
Slovenia	2,5	2,5	1,8	1,8	2,3	2,5
Slovak Republic	5,0	3,2	2,5	2,5	5,3	5,8
Ukraine	19,6	17,8	13,2	17,4	40,2	41,6
<b>Mean</b>	<b>5,0</b>	<b>4,2</b>	<b>3,5</b>	<b>4,7</b>	<b>10,5</b>	<b>11,4</b>

Source: data collected from the World Bank Database; www.imf.org

Starting with 2007, the Romanian banking system is characterized by an increasing financial intermediation sustained by domestic demand and supply, an accelerate rhythm of households lending and shortages in deposits-credits ratio with effects on external financing. In 2009, the credit for the private sector reduced compared to 2008, evolution explained by decreasing resources flows, restrictive conditions imposed by banks in order to reduce client's insolvency risk and the uncertainty of future earnings.

Financial intermediation followed an upward trend during 2004 and 2010, but in the last year the 0,6% growth defines the prudential attitude of the banks (liquidity administration, orientation to savings).

**Figure 2 - Financial intermediation in the Romanian banking system**



Source: \*\*\*National Bank of Romania, Financial Stability Reports 2002-2011, www.bnro.ro

Credit risk is a major concern of the Romanian banking system, a signal for future losses and an indicator of the real cost of the crisis.

**Table 3 - The evolution of credit risk indicators in the Romanian banking system between 2004 and 2011**

Indicator	2004	2005	2006	2007	2008	2009	2010	Jun. 2011
Overdue and doubtful loans (net value)/Total credit portfolio (net value)	0.28	0.26	0.20	0.22	0.32	1.45	2.22	<b>2.51</b>
Doubtful and past-due claims (net value)/ Total assets (net value)	0.18	0.15	0.14	0.17	0.29	1.01	1.49	<b>1.70</b>
Credit risk ratio <sup>2</sup>	2.85	2.6	3.1	3.7	6.5	15.3	20.8	<b>21.9</b>

Source: Data collected from National Bank of Romania, Monthly Bulletins (Dec 2004-Dec 2010, June 2011), Financial stability report, 2011, www.bnro.ro

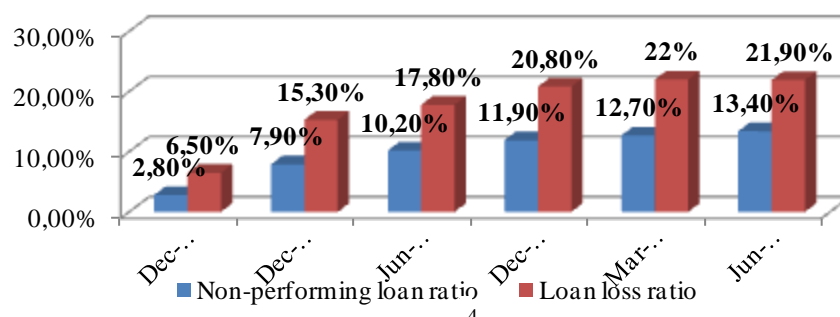
The deterioration of credit portfolio was determined by economic recession, an increasing unemployment level, high credit interest rates, financial disintermediation, and national currency depreciation. As positive aspects in the Romanian banking system we can mention the absence of toxic assets and the fact that no credit institution had severe problems, so that public money was not

<sup>2</sup> Gross exposure of non-bank loans and interest classified as doubtful and loss / Total classified non-bank loans and related interest, excluding off-balance sheet items. The NPLs represent gross exposure of loans and related interest overdue for more than 90 days and/or for which legal proceedings were initiated. The definition is in line with the IMF's recommendations and allows international comparisons.



use for saving banks. Contrary, the support of shareholders offered supplementary reserves to absorb losses.

**Figure 3 - The evolution of asset quality in the Romanian banking system between 2008 and 2011**



Source: \*\*\*IMF Country Report No.11/297, www.imf.org

The evolution of non-performing loans reveals the orientation to a scale economy- accelerate dynamics of lending, a risky business model inappropriate for the Romanian domestic market and strategies orientated to volumes, clients, assets instead of quality (cash-flow projection, business, internal and external economic environment, policies mixture) (Dănilă, 2010).

**Table 4 - Measures proposed and implemented by National Bank of Romania for lending activity *ex ante* and *ex post* the financial crisis**

	Monetary policy measures	Prudential measures
Before the manifestation of the financial crisis (2004 - 2007)	<ul style="list-style-type: none"> <li>- Gradual increase of monetary policy rate to 10,25% in August 2008;</li> <li>- Gradual increase of minimum reserve requirements to maximum 20% for national currency and maximum 40% for foreign currencies.</li> </ul>	<ul style="list-style-type: none"> <li>-to establish a maximum level of indebtedness for individuals;</li> <li>- to limit the bank's exposure to currency risk;</li> <li>- to introduce new requirements concerning provisions for loans to borrowers not covered in foreign exchange;</li> <li>-to regulate and supervise non-banking institutions.</li> </ul>
After the manifestation of the financial crisis (2008 - 2011)	<ul style="list-style-type: none"> <li>- Gradual decrease of monetary policy rate to 6,00% in November 2011;</li> <li>-Gradual decrease of minimum reserve requirements to maximum 15% for national currency and</li> </ul>	<ul style="list-style-type: none"> <li>- flexible conditions for households loans;</li> <li>-improvement measures for banking liquidity;</li> <li>- new regulation for solvability;</li> <li>- the "Vienna Agreement" with the nine largest banks active in Romania, the aim was to preserve their exposure to the country (may 2009).</li> </ul>

<sup>3</sup> Unadjusted exposure from loans classifieds as "loss" defined as past 90 days and/or initiation of legal preceding / total loans and interest, excluding off-balance sheet items.

	maximum 20% for foreign currencies.	
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Source: adaptation after Dănilă, N., (2010), "Rolul sistemului bancar din România în reluarea creșterii economice"

In the context of the global downturn, credit institutions strategies were directed from high market shares, massive credit campaigns and profit maximization on short-term to qualitative analysis of credit activity and risk management. The Romanian authorities applied severe measures such as cuts earnings, staff reduction in the public sector and increasing value added tax by 5%. A significant impact had the approval of Ordinance no.50/2010 designed to align the internal legislation to the European one in terms of credit contracts. The Romanian banks restricted credit access, planned to reduce costs and to adapt in the new economic context.

#### 4. THE ANALYSIS

For the econometric analysis we used four variables: consumer credit for households (CONSCR- million lei), credit risk ratio (DCRRISKR-percentage), medium exchange rate (DMEXRATE- EUR/RON) and number of employees in the economy (DNOEMPL- thousands) monthly collected from January 2007 to August 2011.<sup>4</sup>

Dependent Variable: CONSCR  
Method: Least Squares  
Date: 11/09/11 Time: 18:44  
Sample (adjusted): 2007M02 2011M08  
Included observations: 55 after adjustments

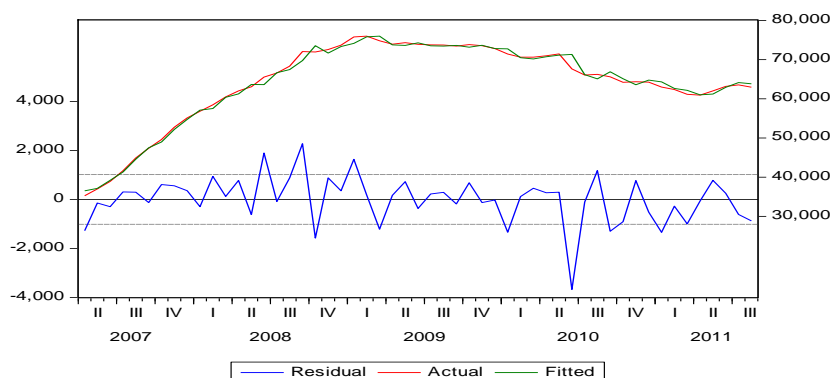
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	57022.27	1710.868	33.32943	0.0000
DCRRISKR	10166.32	3603.466	2.821262	0.0068
DMEXRATE	41116.91	17159.95	2.396098	0.0203
DNOEMPL	-202.3682	51.47550	-3.931350	0.0003
R-squared	0.448372	Mean dependent var		62963.34

The results show that all variables have significant values ( $Prob < 5\%$ ), there is an indirect and very strong relationship between the number of employees in the economy and the volume of consumer loans. In the analyzed period, this evolution is explained by an increased uncertainty in the local market, the restriction imposed by the banks reduced the access to consumer credit. The uncertainty of the future earnings also became a major concern.

<sup>4</sup> National Bank of Romania statistical data.

A direct and strong relationship between credit risk ratio, medium exchange rate (the independent variables) and the volume of consumer loans shows that non-performing loans follow the same trend with consumer credit, a curious situation covered by the fact that credit risk rate consider gross exposure of loans and related interest overdue for more than 90 days. If the medium exchange rate EUR/RON goes up, consumer credit increases: the component of consumer loans in the national currency exceeds the euro lending.

The value of R-squared shows that 44.83% of consumer credit changes are explained by the evolution of number of employees in the economy, credit risk ratio and medium exchange rate.



The regression equation is:

$$\text{CONSCR} = 57022.27 + 10166.32 \cdot \text{DCRRISKR} + 41116.91 \cdot \text{DMEXRATE} - 202.3682 \cdot \text{DNOEMPL}$$

The graph shows that our model is fit and the independent variables (credit risk ratio, medium exchange rate and the number of employees in the economy) explain the evolution of the dependent variable (consumer credit).

## CONCLUSIONS

In the last years, credit risk was a real threat to banking financial stability causing disruptions, spreading uncertainty and confusion on the local market. The financial crisis cut deep into banking balance sheets, determined large costs variations, decreasing banking profitability and affected the lending capacity. In the economic literature, the interrelation between crisis and lending was analyzed from different perspectives: in terms of excessive lending, booms, liquidity, monetary policy, macroeconomic indicators, credit standards, costs. The essence of crisis-lending duality in recent years has the following coordinates: 1) the new characteristics of the global financial system associated with macroeconomic imbalances led to unsustainable lending boom and increasing asset prices; 2) these characteristics had a crucial role in the financial crisis transmission, in the real economy; 3) the shocks felt in the banking system reduced the credit supply.

In Romania, after 2007, banking indicators changes reflected the negative effects as a mixture of weaknesses, disruptions, unsolved issues and fragilities. The financial situation of the clients, determined by cuts earnings and staff reduction in the public sector, was the major concern for banks. The uncertainty of future earnings and the restrictions imposed by banks define a slow-down trend in lending activity.

The major directions for improvement concern an effective prudential regulation environment in order to manage risks, discourage lending in a foreign currency, but counting the volume of the national resources, a clearly distinction of uncertain clients- to implement solid criteria that consider all social, financial and historical aspects and to collect information in order to monitor risks. The Romanian banking system has to find the optimum structure for lending and savings, to repair the credit cycle, to improve the portfolios quality and to minimize risks. The empiric analysis shows that consumer lending is influenced by medium exchange rate, credit risk ratio and the number of employees in the economy. The client's profile is the key for the quality of the portfolio in the banking system. The question that arises is: will banks be able to maintain a high level of lending reconsidering the mix of criteria? Managing credit risk demands for changing perceptions, new legislation and efficient instruments.

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