



MACRO VARIABLES IMPACT ON CREDIT RISK AND INFLUENCE IN BANKING CAPITAL AND JOB CUTS IN ROMANIA

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Abstract

The scope of the research paper is to capture the connection between the representative macro-economic variables, gross domestic product, gross salary income, exchange rate EUR/RON, active interest rate and unemployment rate, respectively the variables which quantify the credit risk, non-performing loans rate and credit risk rate. For the quantitative analysis we used the VAR econometric models, the study being completed with a qualitative analysis which observes the influence in the credit institutions capital and the available jobs in the financial-banking system.

The results obtained showed a considerable influence of the exchange rate, gross salary income and interest rate on the credit risk rate, while the non-performing loans rate was mostly influenced by the interest rate and gross salary income. The qualitative analysis exposed that at global level the losses registered in the banking sector were about 1.2 trillion USD, while the new capital raised was about 1 trillion USD and almost 390 thousand job cuts. In the Romanian banking sector, the study illustrates cumulated losses of 13.3 billion lei, compensated by an increase in capital at about 21 billion lei and restructuring of about 15 thousand jobs.

The results obtained have both practical applicability, but also in the economic policies, clearly exposing the effects of the credit risk through the deterioration of the macro-economic environment. The information presented through the empirical analysis can be used by the researches, supervision and regulatory authorities or by the credit institutions in stress testing, forecasts or resolution decisions.

Keywords: Credit; non-performing loans; risk management; interest; capital; jobs.

1. INTRODUCTION

Considering the macro-economic evolution in the financial crisis period and the impact in the credit portfolios of the financial institutions, an increased interest is shown regarding risk management and early warning systems. The risk management represent an important subject for the credit institutions and an increased supervision is made nowadays over the quality of the credit portfolios instead of the volumes. In the 2005-08 years, the financial institutions assumed an aggressive growth policy of the market share, based on enabling an easily credit analysis system and products that encouraged the speculative transactions. Such examples can be underlined in the Romanian banking system, but not only.

The research aims to define a framework to uncover some macroeconomic influences over the credit risk and non-performing loans rate. The paper addresses two main issues: the determinants of the credit risk rate and the influence of the economic environment performance.

To understand the impact of the credit risk, the paper analyses the macro-economic conditions through the following variables: gross domestic product, unemployment rate, gross income, interest rate and exchange rate EUR/RON. The working methodology is based on statistical analysis and the interpretation of results. The variables considered were analyzed using the VAR models.

The approach on the Romanian market was used in this research because the economy is not in the Eurozone area, is an emergent economy depending on the external investments and the local market showed a good increase of loan volumes in the economic growth periods.

The empirical analysis aims to explain the influence to which the independent variables have on credit risk (dependent variable measured through credit risk rate and non-performing loans rate). The qualitative analysis is presenting the impact of the credit risk in the Bank's capital and the banking jobs restructured.

2. LITERATURE REVIEW

Methodological solutions were used for measuring the impact of macro-economic conditions over the reimbursement capacity of the debtors, which rely in multiplying the set of explanatory variables for the scoring model with aggregated indicators (Philip Bunn & Victoria Redwood (2003), Company accounts based modelling of business failures and the implications for financial stability, Bank of England working papers 210, Bank of England). Also, the connection functions can be used for modelling the dynamics of some balance sheet items of the debtor through equations, including macro-economic variables (Philip Bunn & Victoria Redwood (2003), Company's accounts based modelling of business failures and the implications for financial stability, Bank of England working papers 210, Bank of England).

Regarding credit risk scorecards, the methodological solutions should be developed using multiple regressions with macroeconomic factors. In this context, the dependent variable is the NPL rate or the credit risk rate (Pain, D., 2003, The Provisioning Experience of the Major UK Banks: a Small Panel Investigation, Bank of England Working Paper; Hogarth G., Whitley J. (2003), Assessing the strength of UK banks through macroeconomic stress tests, Financial Stability Review, Bank of England), the common econometric techniques used being the regressions and VAR models (Jorda O. (2005), Estimation and inference of impulse responses by local projections, American Economic Review 95(1); Saurina, J. G. Jiménez Zambrano (2006), Credit cycles, credit risk, and prudential regulation, International Journal of Central Banking, June pp. 65-98).

The GDP growth, the exchange rate appreciation, the interest income and the value of inter-bank loans are the variables that best explains the default rate in case of the African countries (Fofack H. (2005), Nonperforming loans in sub-Saharan Africa: causal analysis and macroeconomic implications, World Bank Policy Research Working Paper No. 3769). A year later, Hu (2006) studied the relationship between the corporate governance and bad loans, and came to the result that there is an indirect correlation between them. The study performed by N. Klein, 2013 (Non-Performing loans in CESEE: determinants and impact on macroeconomic performance, International Monetary Fund Working Paper 13/72) analyses, during 1998-2011, the NPL in 16 countries located in Central and South Eastern Europe (CESS). His results showed that the level of bad loans can be determined both by macroeconomic conditions and those specific to the banking sector, although the latest were considered to have a relatively low explanatory power. While the default rate is impacted by macroeconomic conditions (GDP, unemployment and inflation growth), the analysis indicates that there are strong effects from the banking systems to the real economy, suggesting that the high rate of bad loans many central and eastern European countries are facing, have an indirect influence over the pace of the economic recovery.

The specific literature focused on explaining the influence of the macroeconomic performances on the credit risk and non-performing loans rate. A more detailed view of this topic was provided by the economists Dash and Kabra (Dash, Manoj K., and Gaurav Kabra, (2010), The Determinants of Nonperforming Assets in Indian Commercial Banks: An Econometric Study, Middle Eastern Finance and Economics, Vol. 7.)

Analysing the NPL divided by different types of loans (consumer, mortgages, corporate) for the 9th largest Greek banks, the study made by Louzis, Vouldis and Metaxas (Dimitrios P. Louzis & Aggelos T. Vouldis & Vasilios L. Metaxas (2010), Macroeconomic and bank-specific determinants of non-performing loans in Greece: a comparative study of mortgage, business and consumer loan portfolios, Working Papers 118, Bank of Greece) revealed that the indicator is explained by the management quality and macroeconomic fundamentals. Also, some other conclusions were related to the positive correlation between the NPL and the real lending rates, the un-efficient management and the higher proportion between operating expenses and incomes. The same results were also obtained by Espinosa and Prasad (Espinosa, R., and A. Prasad, (2010), Nonperforming Loans in the GCC Banking Systems and their Macroeconomic Effects, IMF Working Paper 10/224, Washington: International Monetary Fund) in a working paper referring to nonperforming loans and their macroeconomic effects. The literature that pertains best with the analysis from the paper is focused on explaining and predicting the credit risk rate at a macro level using the aggregate credit risk values. These values can refer to the total outstanding loans from the economy or only to specific types.

Michael Boss (Boss, Michael, a Macroeconomic Credit Risk Model for Stress Testing the Austrian Credit Portfolio, Financial Stability Report 4. OeNB. Boss M., Fenz G., Pann J., Pühr C., Schneider M. And Ubl E. (2009),

Modelling Credit Risk through the Austrian Business Cycle: An Update of the OeNB Model, Financial Stability Report 17, and OeNB.) Applies the methodological solution described above to model the sectorial dependencies of the credit risk rate in the Austrian economy, for exposures belonging to non-financial companies and also to private individuals.

Previously, Arpa (2001) applied the regression model on the Austrian banking sector, showing that the total credit risk varies depending on the real GDP growth, the consumer price inflation and the real interest rates. Using a regression model, Shu (2002) conducted a study on the NPL in Hong Kong, stressing that an increased default rate can be explained by an increase in the nominal interest rates and in the number of bankruptcies, while a decreased interest rate is driven by the increased consumers price inflation, the economic growth and inflation generated from the real estate market prices. Considering Finland, Virolainen (Virolainen, K. (2004), Macro Stress Testing with a Macroeconomic Credit Risk Model for Finland, Bank of Finland, Discussion Papers, No.18) applies the dynamics models for credit risk by utilizing some macro-economic variables like: economic growth rate, interest rate for a tenor above 1 year, corporate indebtedness. Unlike the other research papers, the sensibility analyses performed for the credit portfolios granted to companies is divided in six types of activities.

Roberta Fiori and Simonetta Iannotti (Fiori, R., A. Foglia and S. Iannotti, (2007), Estimating Macroeconomic Credit Risk and Sectoral Default Rate Correlations for the Italian Economy, Working Paper, Bank of Italy) target the analysis of the impact in which the economic image of Italy affects the evolution of credit risk rate triggered by exposures of non-financial companies divided, in eight categories, by types of activity sector. The methodology for analysis is based on the approach used by Wilson (Wilson, T.C., (1998), Portfolio Credit Risk, FRBNY Economic Policy Review, Vol. 4, No. 3) and the further developments projected by Virolainen (Virolainen, K. (2004), Macro Stress Testing with a Macroeconomic Credit Risk Model for Finland, Bank of Finland, Discussion Papers, No.18.), which propose the evaluation of the operational form between the empiric values of the default rates at sector level and the macroeconomic environment is made through the SUR method.

Regarding the classification of loans in non-performing classes, IMF (International Monetary Fund) recommends that both the loans and other assets to be classified as non-performing when the instalments registers overdue for more than 90 days. Moreover, non-performing loans will include also the loans with a debt service less than 90 days when a clear indication for default exists, e.g.: bankruptcy, insolvency (European Banking Coordination “Vienna” Initiative - Working Group on NPLs in Central, Eastern and Southeastern Europe (2012), A Concerted Approach, IMF). Furthermore, Moody’s (Moody’s, (1997), Investors Service “Moody’s Approach to Analysing and Rating Emerging Market Banking Systems: Argentina as a Case Study”) rating agency considers a loan as non-performing if it is framed in one of the following situation: for consumer loans granted to individuals if the overdue term is greater than 60 days; for commercial loans and leasing if the overdue amount is greater than 90 days; any loan to which there is a clear indication of default. In the international practice, based on the Bank for International Settlements’ requirements, there are several approaches, synthesized in the **table no.1**, considering the applied criteria:

Table 1. Criteria used for determining the non-performing loans in Europe	
Criteria	Countries and allocation
Number of overdue days	>90 days: 12 countries (Romania, Bulgaria, Cyprus, Greece, FYR Macedonia, Serbia, Hungary, Poland, Czech Republic, Ukraine, Latvia, Austria) >60 days: 2 countries (Estonia, Lithuania) >30 days: 1 country (Russia: >30 days for companies and >60 days for individuals)
Legal proceedings	All 15 countries mentioned
Financial performance	
Contamination at debtor level	Yes: 10 countries (Romania, Bulgaria, Serbia, Hungary, Czech Republic, Russia, Estonia, Latvia, Cyprus) No: 4 countries (Greece, Poland, Lithuania, Austria) N/A: 1 country: FYR Macedonia

Source: Popa, R. (2010), Non-performing loans - methodology and comparisons, presentation within the National Bank of Romania

In addition, the figure no.1 highlights the evolution of nonperforming loans during 2007-2014, within the countries previously analyzed. On the vertical axis is shown the percentage level of bad loans while the horizontal axis contains the time frame.

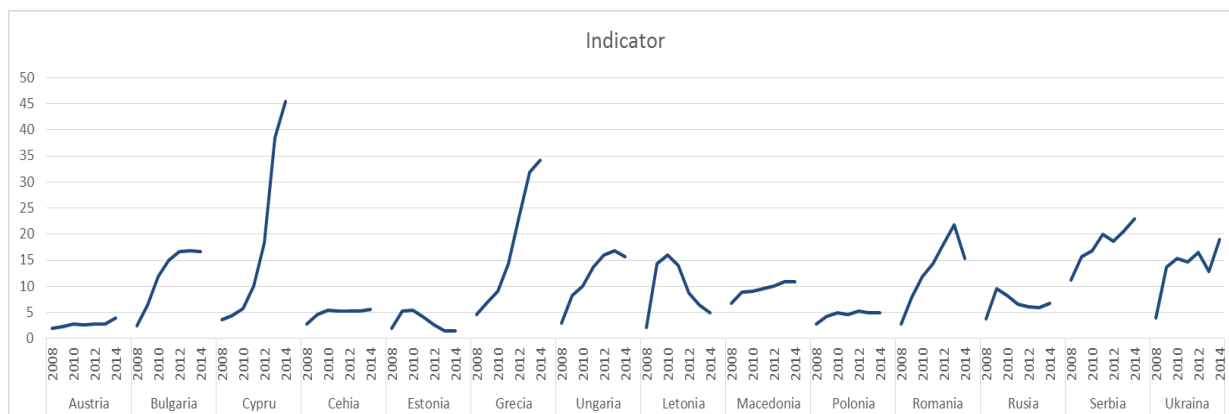


Fig 1. The NPL ratio in Europe during 2007-2014.

Source: Authors performance using World Bank data.

IFRS, IAS 39 - Financial Instruments: Recognition and Measurement outlines the requirements for the recognition and measurement of the financial assets, financial liabilities, and some contracts to buy or sell non-financial items. Financial instruments are initially recognized when an entity becomes a part to the contractual provisions of the instrument, and are classified into various categories depending upon the type of instrument, which then determines the subsequent measurement of the instrument (typically amortized cost or fair value). Special rules apply to embedded derivatives and hedging instruments. A financial asset or a group of financial assets is considered as impaired if: there are evidences of depreciation because of an event that occurred after the initial recognition of the asset; the event that generates loss has an impact over the future cash flows estimated for the financial asset that can be estimated reliably. The following examples represent events that generate losses: financial difficulties of the debtor; breach of contract (overdue in paying the principal/interest); impending insolvency/bankruptcy.

For regularly testing the assets quality, the European Banking Authority (EBA) and the European Central Bank (ECB) organizes various assessment exercises, one of the most complex exercises being known as AQR - Asset Quality Review. This exercise made in 2014 targeted over 120 banks in 18 countries, verifying not only the parent banks, but also whether their subsidiaries, located or not within the Euro zone. According to the data presented, almost 1.250 loan files have been revised, which equals to some total risk-weighted assets of 3.72 trillion (about 58% of the total risk exposure of the banks analyzed).

To quantify the credit risk, the National Bank of Romania used credit risk rate and later it introduced the non-performing loans ratio which was modified through the years, nowadays having the definition adopted by the European Banking Authority. The first indicator is defined as the ratio between the gross exposure of the non-banking loans classified as loss or doubtful and the total amount of loans classified, non-banking loans, excluding off balance sheet items. The second indicator, NPL rate, is defined as the ratio between gross exposure related to the non-banking loans classified in "loss 2" with a debt service over 90 days and/or to which the legal proceedings were started and the amount of loans classified, non-banking loans, excluding off balance sheet items. The difference between the two indicators is that credit risk rate comprises also the doubtful and loss 1 classified loans as against NPL rate which considers only loans classified in loss 2 and/or with legal proceedings.

Two Romanian authors - Moinescu B. and Codîrlăşu A. ("Lending, economic growth and nonperforming loans: empirical evidences from the new EU member states", Working Paper, Project "PN-II-ID-PCE-2011-3-1054 - Uncertainty, Complexity and Financial Stability", 2013) have deepened the research on NPLs with reference to the macroeconomic imbalance expressed by the variations in the private sector lending. The effects generated by analyzing the items which supported the mechanism for leading increasing (economic growth, variations of NPL rate) were followed to highlight the shocks impact on the banking system loan portfolios. The research was performed on ten EU countries, their values being analyzed using annual data regressions, covering a period of 12 years (2000-2011).

3. DATA USED IN ANALYSIS

The following variables were used in the empirical analysis: credit risk rate and non-performing loans rate (as dependent variable); GDP in market prices (computed quarterly but with seasonally adjusted data, using the average

prices for 2000 year); average quarterly exchange rate EUR/RON, hereinafter named as “exchange rate”; average gross income; average RON lending interest rate used by a credit institution, hereinafter named as interest rate and the unemployment rate. The observation period for analysis is January 2001 – June 2016 in case of the first model, based on credit risk rate and September 2009 – June 2016, both of them based on VAR models.

The following methodological research supports the arguments for choosing the variables above:

- GDP was considered relevant because, in line with the economic theory, the evolution of credit risk depends on the economic cycles and, in this case, on GDP evolution;
- Exchange rate EUR/RON was included because 45%-65% of the loans granted in the period under review were denominated in EUR and due to the unfavorable evolution of the national currency against EUR after the global financial crisis;
- Income is the primary source of repayment of most loans. The data used in the statistical model take into consideration the incomes reported by companies with more than 3 employees, avoiding thus the extremes of the data series;
- Interest rate is an important element in the cost of credit, thus an increased interest rate may affect a borrower's ability to repay;
- Unemployment rate indicates the population employment level and, together with the income, influence the repayment capacity of a borrower.

Being one of the oldest banking prudence indicators calculated by the National Bank of Romania (NBR), the credit risk rate was used in the analysis, covering a period that includes a full economic cycle. In addition, it can be considered as an early warning indicator given that its increasing rate leads to the necessity of additional provisioning.

As the credit risk rate was computed by NBR until the end of May 2014, the option for following months until June 2016 was to apply an ARMA model for data forecasting. Through this model, the credit risk rate has been supplemented with 8 observations as a statistical forecast to cover the period without the NBR computed indicator. ARMA model uses historical data series to forecast the values for a required timeframe, highlighting how the analyzed variable reacts to the stochastic variations, being a trend forecast. As the trend observed by the ARMA model was increasing, the expected results were higher than those previously computed by the National Bank. To ensure the comparability and quality of the forecast data, we analyzed the trend of the non-performing credit indicator where we observed a steady decline starting with June 2014. The downward trend has been observed as a result of the National Bank's efforts to reduce bad loans by recommending commercial banks performing sales or recording off-balance sheet transactions. Thus, we considered appropriate to amend the results achieved by the econometric considering the economic reasoning, i.e. to decrease by 10% the values obtained. This 10% was the quarterly average decreasing of the performing loans.

The non-performing loans indicator was computed by NBR since September 2009 and starting with September 2015, the National Bank reports it as defined by the European Banking Authority. In the study the data used covered the entire period of computation of the indicator, starting with September 2009.

An important argument in choosing the study's variables is based on their representativeness: highlighting the financial market (interest and exchange rates), quantifies the real economy (GDP), tracing the labor market evolution (unemployment rate, net income), and showing the financial system health (credit risk rate). The real GDP, unemployment rate, inflation and financial variables are the most important study variables of an economic cycle (Mishkin, 2013).

The quarterly values computed as average of monthly values were considered for aligning all variables reporting period: for example, GDP has the lowest measurement frequency, quarterly, and due to customs of econometric models (especially the VAR model) when studying macroeconomic aspects. The latter showed an increased significance within quarterly analysis while the VAR model applicability is higher on quarterly data. The observation period covers at least an entire economic cycle (a period of growth followed by a crisis and a subsequent recovery). The analyzed period, January 2001 - June 2016 in case of the model based on credit risk rate and September 2009 – June 2016 in case of the model based on the non-performing loans, covers an entire economic cycle, from the settle and economic recovery in the early 2000s, following with the economic boom (2005-2008 period) and the crisis beginning by the end of 2008, pursuing with the recovery period after 2012 year. All the statistical test and analysis performed are available within the author.

4. ASPECTS REVEALED THROUGH THE ANALYSIS

To check the economic assumptions that were presented above, two VAR models were used. The advantage in using the VAR model is that is simple, it does not imply severe restrictions for the variables and it can be used in many other purposes (analyse, Impulse Response Functions, forecasting) (Svetlozar T. R., Fabozzi, F.J., Mittnik, S., (2007), Financial econometrics: from basics to advanced modeling techniques, Hoboken: John Wiley & Sons, The Frank J. Fabozzi series.). The weakness of this model is expressed by the fact that is not a theoretic model and, Choleski decomposition for the estimation of the parameters is not always well-matched with the economic theory.

To determine the number of lags to be used, an analysis has been performed, VAR Lag order selection criteria. A higher number of lags were chosen, three in this case for both models, because an impairment of the macro indicators (decrease of GDP, raise of unemployment, increase of the exchange rate) it is not immediately reflected in the credit risk rate growth, a gap being observed. Also, a test for the possible co-integration relations between the selected variables was conducted. In this case a relative small co-integration relation was observed but the VAR models were still preferred for use. The stability test performed shows that the VAR models applied over the equation satisfies the stability condition. Homoscedasticity was tested through White test which showed that the hypothesis is respected. The statistical analysis through VAR models uses two main functions: impulse-response and variance decomposition.

Impulse – response function is used in studying the evolution of the dependent variable after a shock is applied to the independent ones. On the other hand, variance decomposition illustrates how a variable can explain the evolution of another variable. The period under review was settled as 10 quarters and the residual was defined as one standard deviation because the variables have different units of measurement.

Impulse response functions illustrate that impairment of the macro-economic indicators determines the growth of the credit risk indicators, in compliance with the economic theory as follows:

- In case of the VAR model based on credit risk rate, the impulse-response functions revealed an influence of about 56% of the exchange rate, 40% of the gross income and about 28% of the interest rate.
- Impulse response functions applied on the second model, based on the non-performing loans, exposed an influence over 51% of the interest rate and about 10% of the exchange rate. We observe the fact that the exchange rate influence is smaller, which is in line with the economic assumptions, considering that the highest deterioration of the exchange rate, 20% in nominal terms, happed during September 2008 – March 2009, period not covered by the second model.
- Variance decomposition applied to the VAR model based on credit risk rate, disclosed that about 50% from the dependent variable is explained by the exchange rate. Also, the gross domestic product explained about 40% of the credit risk rate, while the gross income only 20%.
- For the second model, based on the non-performing loans indicator, the interest rate explained about 30% of the dependent variable decomposition, while the gross income explained about 22%.

Considering the outcome of the statistical tests, the above mentioned macro-economic variables play an important role in the financial stability of the monetary and banking system as a severe deterioration of one of them influence the credit risk rate.

The current paper proposes both a statistical study as well as a qualitative one. The main outcome of the qualitative analysis is to show the influence of the credit risk rate into the capital which supports the activities of a Bank. Going further with the study, it was analyzed what are influences in the number of employees from the banking system. Considering the scope of the study, the qualitative analysis was applied as a top-bottom approach starting with a global overview and finishing with the impact in Romania.

A loss coming from the default of a loan is indirectly transposed into a capital shortfall, through the provisions, write-off and de-recognition. Over the last years, we observed continuous recapitalization actions in the banking environment made even through bail-out, bail-in, and capital infusion from the shareholders or new stock selling. The rationale for the capital increases resides in the increase of the credit risk through the non-performing loans and loss recognition but also from the inefficient restructuring actions.

An indirect influence of the credit risk over the available capital it is observed, an inverse relation which shows that an increase of the non-performing loans implies a higher stock of credit risk provisions, thus reflecting in an expense in the balance sheet and a loss in the P&L account and the available capital.

A study published by Achrya, V. ET all (2011), indicates that the banks encountered massive losses in the global financial crisis, between 2007 and 2009, but the necessary capital, due to the new legislation requirements, was

raised considering the contribution of the government or the private investors. Table no. 2 presents the total loss from loans and off-balance sheet assets registered in the banking sector on each continent, quarterly measurement. As it can be seen, the biggest amounts were registered in American region, followed by Europe and less more by Asia.

Table 2. Loss from loans and off-balance sheet assets in the banking sector	
Region / Period (bln USD)	Total loss (period Q3 2007 – Q2 2011)
Global	1,261.8
Americas	712.3
Europe	512.8
Asia	36.7

Source: author computation following Bloomberg WDCI function¹ and Achrya, V. ET all (2011).

A better view on the loss amounts, capital increase and the job cuts at the global level can be observed in the chart no.2. In about four years, almost 400 thousand jobs in the banking system were cut, in the same time a loss of 1.200 billion being registered for which a capital increase of about 1.000 billion was needed.

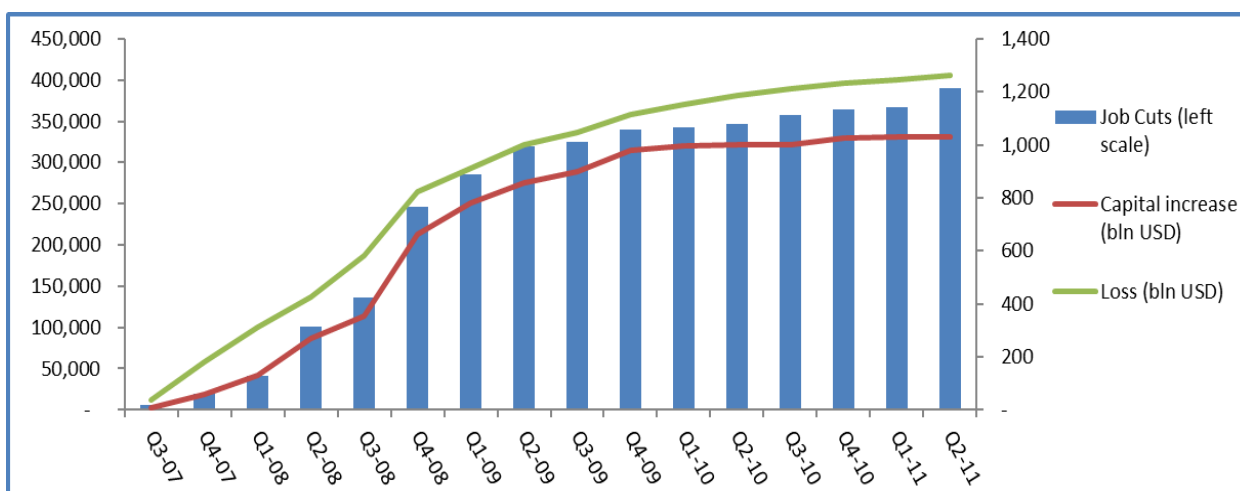


Fig 2. Comparison between Capital increase, Losses and job cuts – global view.

Source: author computation based on the information from Bloomberg, WDCI function.

The information available for the Romanian banking environment is not so well synthetized, considering that the National Bank of Romania does not disclose all the prudential indicators. The figure no. 3 illustrates a comparison between the credit risk provisions, both prudential and IFRS, and the net average salary in the banking system. We can observe an uptrend in provisioning level, while the net salary didn't reflect a trend, also because the restructuring of the banking system has not always easy to be performed.

¹ WDCI function available in Bloomberg platform measures the loss from loans and off balance sheet assets as well the capital increases.

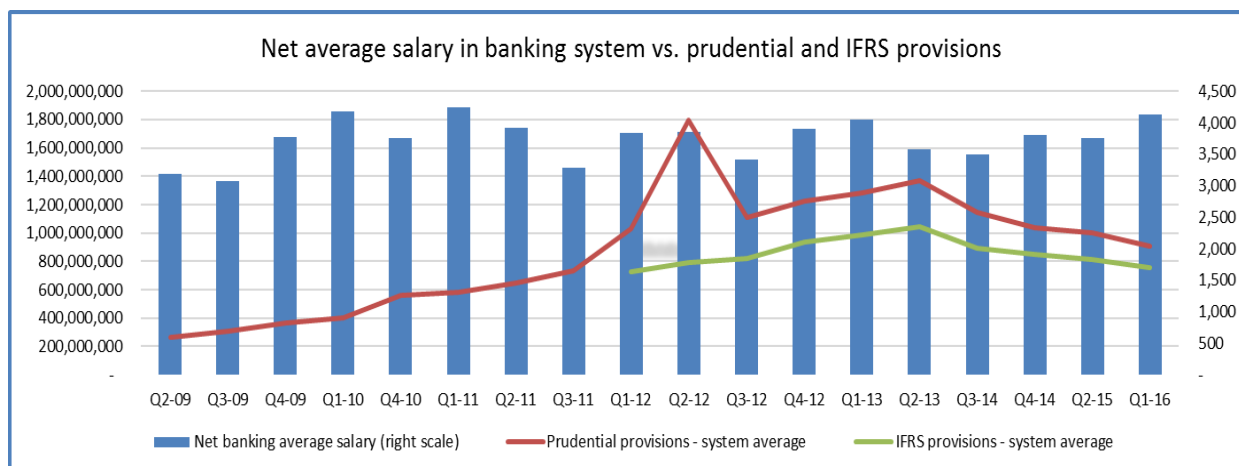


Fig 3. Net average salary in banking system vs. prudential and IFR provisions – Romania.

Source: author computation based on the information reported by National Bank of Romania

Figure no. 4 shows a comparative study by considering the available capital, net profit and the number of employees in the banking sector. The maximum number of employees in the system was achieved at the end of the year 2008 – approximately 71 thousand people, while the figure decrease up to 55 thousand in 2016. Banks' capital increased from about 24 billion lei at the beginning of 2008 to a maximum of 44 billion lei at the end of 2013, when banks began to make write-offs and massive de-recognition of bad loans. The profitability of the banking sector registered very low levels between 2009 and 2014, the maximum loss being achieved at the end of 2014 (4.8 billion RON) – figures influenced by high amounts of non-performing loans derecognized by the first two banks in the system. After 2015, the banking system went profitable, the capital amount being at a stable level of 39 billion RON.

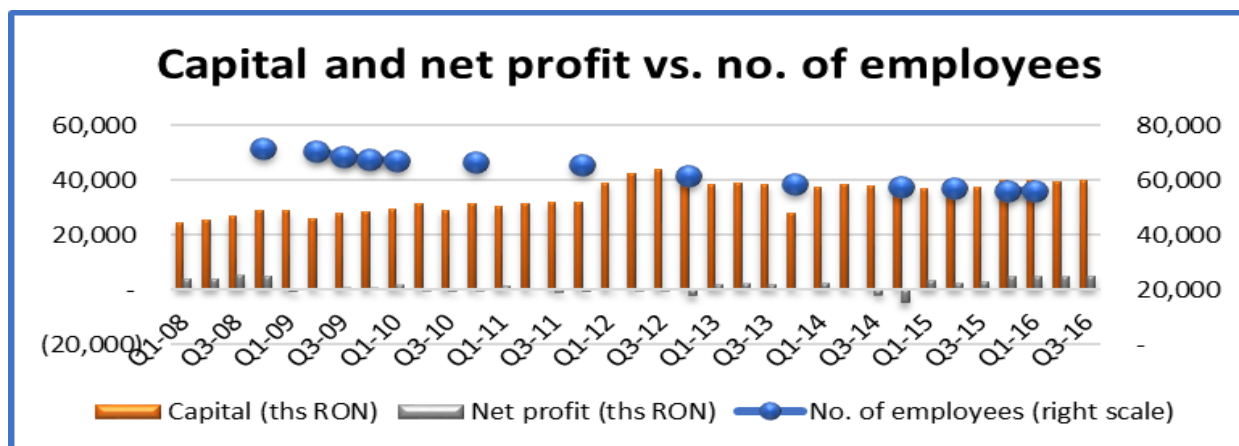


Fig 4. Comparison between Capital, net profit and available jobs – Romania.

Source: author computation based on the information reported by National Bank of Romania

5. CONCLUSIONS

The recent global financial crisis offers a very good example of rising NPL and credit risk rate. A close examination determines the influence of the macroeconomic performances. The analysis performed examines the aggregate NPL and credit risk rates and macroeconomic data.

The VAR model presented is developed to define the interactions between the quality of the credit portfolios and the macroeconomic environment from Romania. As illustrated, the biggest influence on credit risk belongs to the exchange rate because of the big amounts of loans granted in foreign currency, especially euro. Interest rate and gross domestic product have also an influence over the credit risk, but lower than the one of exchange rate.

The qualitative study presents the impact of the financial crisis over the banking loan portfolios through the losses incurred, the capital increases and the job cuts. Through the analysis performed, both globally and Romanian

banking system level, it was illustrated indirect influence of the credit risk in the available capital and the number of jobs from the banking system.

Findings revealed by the research paper have both practical applicability and economic policy implications. The results and econometric relations issued by this research can be used for stress testing and forecasting purposes by regulatory and supervisory institutions and by the banks.

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Authors' Biography



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International conferences attended: From Economic Crisis Towards Economic Growth: Fiscal and Monetary Policy Instruments, INFER-CEFIMO, 9/26/2013, Bucharest, Romania; Globalization, Intercultural Dialogue and National Identity (GIDNI – I), GIDNI – I, 5/29/2014, Tirgu Mures, Romania; Monetary, Banking and Financial Issues in Central and Eastern EU member countries, MBF-EU, 4/10/2014, Iasi, Romania; LUMEN Rethinking Social Action. Core Values, Iasi, Romania; Managing Sustainable Growth, Portoroz, Slovenia; International Finance and Banking Conference FI BA 2017, Bucharest, Romania.

Domains of Interest: Risk Management, Credit Risk, Internal Control system, Cost of Risk, Basel II & III, Internal Audit, and Macro-economic variables.

Professional experience: 4 years in Risk Management and about 6 years in Internal Audit in Romanian Banking sector.

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