Causes and Consequences of NPLs
in Bosnia and Herzegovina Banking Sector

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Abstract: *This paper analyzes the relationship between risks to which banks are exposed, rate of non-performing loans as well as capital adequacy. The analysis was conducted among the banking sector of Bosnia and Herzegovina. For the purpose of the analysis, the International Monetary Fund data - Core Financial Indicators for the period 2008 - 2013 were used. This study differs from previous researches primarily in the fact that the case study is Bosnia and Herzegovina, where there haven't been similar studies. To analyze and evaluate the model, correlation and regression analysis were used. The paper points to those aspects which deserve further attention in order to achieve better and more efficient management of them. Results indicate the increase in risk-weighted assets and rising rates of non-performing loans as one of the component assets. At the same time the growth rate of non-performing loans leads to the growth in risk-weighted assets and therefore the bank is exposed to major risks. Higher return on assets, as an indicator of business performance and management resources and profitability, leads to capital adequacy improvement. There is a strong correlation between the rate of capital adequacy and non-performing loans and that requires further research. Results indicate that better liquidity control leads to a reduction in the rate of non-performing loans and consequently better liquidity position of banks, and thus reduction in liquidity risk. During the analysis it was found that a large proportion of non-performing loans to total loans leads to deterioration in the financial result which is further reflected in the banks' capital. When we talk about capital adequacy we come to the conclusion that the banking system in Bosnia and Herzegovina, despite all the shortcomings and problems is adequately capitalized.*

Introduction

Banking has arrived into process of continuous changes, especially in terms of banking management and operative business. An increasing turbulence of financial markets leads to the strengthening of banking risks. In this environment, making a profitable business has become a very hard and challenging business process. Therefore, bank managers are responsible for creating an adequate business plan and risk controlling policies. Together with all the mentioned above we mustn't neglect the fact that higher profits are followed by higher risks. Management is responsible for negotiating balance and ensures secure, stabile and profitable business.

The precondition for efficient bank supervisory is the establishment of appropriate institutional and regulatory framework. The regulation of banking industry represents the institutional established rules which issue the relationship between balance positions, rules and organization status of banks, status questions and the scope of individual banking business types. This emphasizes the need to define these areas according to international standards and establish the appropriate supervision of the banking business. The requirement for the minimum capital level is settled in order to mitigate the unanticipated losses, and enables the trust of the public about business ability and bank efficiency. In theory, there are four main bank functions: the protection of depositors, the cover of unexpected losses, the control function and the function of bank financing. These main functions indicate the significance and the need for defining the capital requirements. In Bosnia and Herzegovina the supervision is based on CAMEL concept which follows capital, assets, management and liabilities which are the basis for the bank control.

Statute of the banks has prescribed standards which banks have to stick to in their business such as: coefficiency of capital adequacy, coefficiency of capital participation in liabilities, ratio of short-run placements and capital, ratio of foreign currency assets and liabilities, etc. By-laws agency has prescribed minimum standards which banks have to stick to in their business, such as the management of banking activity, capital and risk. According to the fact that placements are the most risky part of bank assets, their quality presents one of the most risky determinants of stability and business success. Rating assets quality is, actually, rating the credit risk, regarding the identification of potential credit losses which are recognized as expenses reserves for risk assets. The level of risk of the credit portfolio shows the ratio between the calculated potential losses and the total credit exposure. Looking at the level of structure and the quality of credit, portfolios of banking credits have to be carefully

considered in detail. Supervisors have to pay attention to the credit risk rating. The two most important profitability factors are: ROAA (return on average assets) and ROAE (return on average share capital).

Literature review

Analysis of the available literature and the works of other authors helped us to gain a better insight into the state of research in this area. Häusler (2005) investigated that the risk mitigation from banks to some another non-banking institutions, such as insurance companies, decreases bank riskiness. It was shown that it leads to the bank riskiness decreasing, but it also increases the insurance risk which requires some better methods of risk mitigations. Theoretical and practical results imply a positive relation between the market expansion and the rate of non-performing loans which can only be explained by market expansion caused by approving credit to risk groups. On the other hand, capital adequacy is positively correlated with market concentration (Yoonhee, 2006). Further, Živković (2007) came to the new implications of the new regulatory bodies and risk managers in the countries which are new members and candidates for membership in the European Union. It was noticed that the risk managers had to think out of borders and margins settled by their native countries. Otherwise, they could be found in a situation of unexpected loses. It was recommended that national regulatory bodies need to take into consideration the simplicity of VAR[i] model which is broadly expanded and used in the developing countries and it isn't adequate for illiquid and undeveloped markets. Slijepčević and Živko (2008) investigated that the banks are able to recognize the risk of interest rate and instruments which can be successfully used in its controlling. This research shows that there is a noticeable lack of financial derivates used in order to manage interest rate risks efficiently. Regarding that, Mitić (2009) analyzed credit derivates, their modalities, advantages and defects. In this paper risk transfers are defined as well as the position and risks which precipitants take on.

Given that the non-performing loans are essentially a macroeconomic problem, rather than the one confined to the financial system, it might also be suggested that central banks (with their "top down" view of things) should be given ultimate responsibility for resisting procyclicality and systemic distress. Such a mandate for the central bank would in fact be consistent with the generally accepted view that price stability should be its principal objective. This consistency becomes obvious if one accepts the fact that the price stability can be as easily threatened by deflation as inflation, if a boom-bust cycle is allowed to become sufficiently severe. Indeed, a

deflationary spiral might in the end prove significantly more dangerous than an inflationary one since monetary instruments can lose their potency in the face of high debt levels and the zero interest rate bound (White, 2009). Emerging-market countries only have an unsecure hold on wealth, and are becoming weaker globally. When they get into trouble, they literally run out of money or at least out of foreign currency, without which they cannot survive (Johnson, 2009). Impelled by the recent financial crisis Chu (2011) investigates actions which policy creators in some countries have implied as a response to crisis in order to save the financial system from declining and depression. Through the analyses of application of the pillar two of Basel II, Mahmutović, H., Ćesić, Mahmutović (2011) showed what is expected from banks regarding the maintaining the required level of capital. Račić and Barjaktarović (2011) analyzed the Basel II application according to the Croatian credit portfolio. It was concluded that the initiation of this standard on the financial market leads to positive effects on the increase of liquidity and the development of the entire economy. Also, the influence of the presence of interbanking deposit market on to the development and performances of the banking sector in Croatia was investigated. The results imply that the banks have to improve their response strategies on to perceiving systemic risk by developing general interest rates policies, by determining maturity structures of the loans and by changing the level of involvement on to global interbank market. The studies have proven a significant negative relation of exports and industrial production against NPLs (Fawad and Taqadus, 2013).

By using the data from the Pakistan banking sector, the results suggested the validity of the traditional view that, i.e. dispersed ownership (publically owned banks) reduces the bank`s performance and enhances the bank`s riskiness (NPLs), whereas the rejected view that concentrated ownership (privately owned banks and foreign banks) enhances the bank performance and erodes the bank riskiness (Fawad, 2013). Customers will feel the impacts of Basel III as borrowers and investors. A higher capital conservation buffer leads to higher regulatory equity costs. Even though capital reservation for classical small and medium sized companies (SME), especially in Germany, remains constant, the implementation of the countercyclical buffer leads to additional equity costs as well. This effect will occur especially in banks where the leverage is relatively high. Customers will get a higher interest rate for their deposits. In the author's opinion, the effect on the liability side of the banks will be much higher than the additional equity costs on the asset side. Banks have to care and optimize their risk management and strategy (Sevend and Svoboda, 2013). The credit boom explanation is the most plausible predictor of

crises since the late nineteenth century; global imbalances have only a weak correlation with financial distress compared to indicators drawn from the financial system itself (Taylor, 2013). Specific covariates are found meaningful. Recommendations include the policy steps to complement the sound financial system with a healthy macroeconomic environment to reduce non-performing loans in commercial banks in Pakistan. Moreover, the need for a policy approach with emphasis on the opposite credit culture and lending policy designed with pertinent economic and financial factors is highlighted (Mehamood, Zahid and Nisar, 2013). In order to test the influence of global financial crisis on banks` non-performing portfolio movements as well as the liquidity on banks in Bosnia and Herzegovina`s profitability, a simple regression model was used. The analysis was implemented on three periods: (1) 2002-2006, (2) 2006-2008 and the last one is for the period 2009-Q2/2013. Direct relations between liquidity, non-performing loans and return on equity have been disclosed. (Alihodžić and Plakalović, 2013)

Bosnia and Herzegovina banking sector has been significantly changed compared to its beginnings. It's necessary to emphasize the increasing significance of banks for the entire economic system. Further, indicators show an increasing share of assets into GDP. High credit growth was noticeable during the whole period (before and even during the crisis). Also, credit demand is growing extremely fast. The banking sector and its assets were well managed and the level of bad assets was kept at a low level until the arrival of the financial crisis. As a consequence of this state, more rigorous credit policy was settled underscoring the importance of adequate credit risk management. There is a noticeable increase of risk-weighted asset to net capital. Temporary capital adequacy of banking sector is at a satisfactory level and it's above the Basel Committee requirements.

Table 1: Main Characteristic of Bosnia and Herzegovina Banking Sector

Stabile capitalisation	- Regulatory capital, M (KM)	2.826
	- Total risk-weighted asset, M (KM)	16.485
	- Capital adequacy rate	17,1 %
Lower quality of credit portfolio	- Total loans, M (KM)	14.637
	- Non-performing loans, M (KM)	1.726
	- Non – performing loans to total loans	11,8 %
Slightly lower liquidity	- Liquid to total assets	27,3 %
	- Liquid assets to short-term financial liabilities	46,7 %

Source: Financial stability report 2013, Central Bank of Bosnia and Herzegovina

Methodology: Data

For the purpose of this paper the International Monetary Funds' data (Core Financial Indicators) for period 2008-2013 were used. Some of them were used in their original form while others were adjusted to the research needs. Net capital to total risk weighted asset corresponds to methodology capital adequacy ratio (CAR) calculation, which is prescribed by Basel Core Principles for internationally active banks in the G10 countries, except that the calculation and analysis of the capital does not include the impact of the country risk and transfer risk. Return on assets (ROA) is one of financial soundness indicator and is intended to measure bank`s efficiency in using its assets. NPLs to total loans represent an indicator of basic set of FSI. It is calculated as the ratio between the non-performing loans to total loans. This indicator is a measure of loans quality. Return on equity (ROE) measures the efficiency of banks in the use of capital. Therefore following variables were defined:

Table 2: Variable Definition

Variable	Type	Coded value
Capital adequacy	One of Core Financial Indicators taken in original form	**V1**
NPLs	Level of non-performing loans, also one of Core Financial Indicators taken in original form	**V2**
ROA	Return on asset, one of Core Financial Indicators taken in original form	**V3**
ROE	Return on equity, one of Core Financial Indicators taken in original form	**V4**
Risk-weighted asset	One of Core Financial Indicators taken in original form	**V5**
Liquid_asset_to_long-term_liabilities	One of Core Financial Indicators taken in original form	**V6**
Total_loans_to_assets	Measured as ratio of appropriate Core Financial Indicators	**V7**
Liquid_asset_to_total_asset	Measured as ratio of appropriate Core Financial Indicators	**V8**

Source: Authors' own work

Methodology: Analysis

In accordance with the practice of scientific research different scientific methods were used during the research conducting and writing of the paper. In formulation and presentation of the scientific research different scientific methods were used. Two groups of methods were used in data analysis: qualitative and quantitative. Most of the analysis is quantitative, but the significance of qualitative analysis can't be ignored. Primary methods in the process of proving the hypotheses include:

- Mathematical methods, the application of different types of statistical analysis in order to test and evaluate hypotheses and assumptions.
- The method of analysis and compilation which was used in theoretical and in the empirical part of the paper.
- The method of immediate incomplete induction which helped to bring some general conclusions based on measurement results.

During the desk research the methods of analysis and synthesis, inductive and deductive, as well as the methods of generalization and specialization were used. For the empirical part of the research, secondary data were used. They were processed by an appropriate mathematical algorithm in order to be ready for further processing and analysis. Also the F-test was used in order to reveal the regression model overall predicting significance (p-value was lower than 0.001). The results of Durbin-Watson of 2 mean that the residuals are uncorrelated. Further causal and functional analysis was used. Causal analysis was used in order to reveal the interconnection between certain risk factors and their influence on to non-performing loans level. Functional analysis was used to understand the relationship and causality between the above mentioned factors. By using the method of synthesis different individual conclusions were combined into one global conclusion.

Findings

The increasing trend of non-performing loans continues to represent the greatest threat to the health of the banking system and financial stability in Bosnia and Herzegovina. The share of non-performing loans in total loans in banking systems at the end of the third quarter of 2013 was 14.86%. During the economy slowdown until the end of 2013 the share of non-performing loans in total loans increased for 23 basis points, also further increase by 1.4 percent in 2014 is expected. If these

expected shocks   assumed in the extreme scenario get real, NPL ratio will increase by 3.1 percent in 2013 and by additional 4.7 percent in 2014.

Figure 1: Share of NPLs in Total Loans
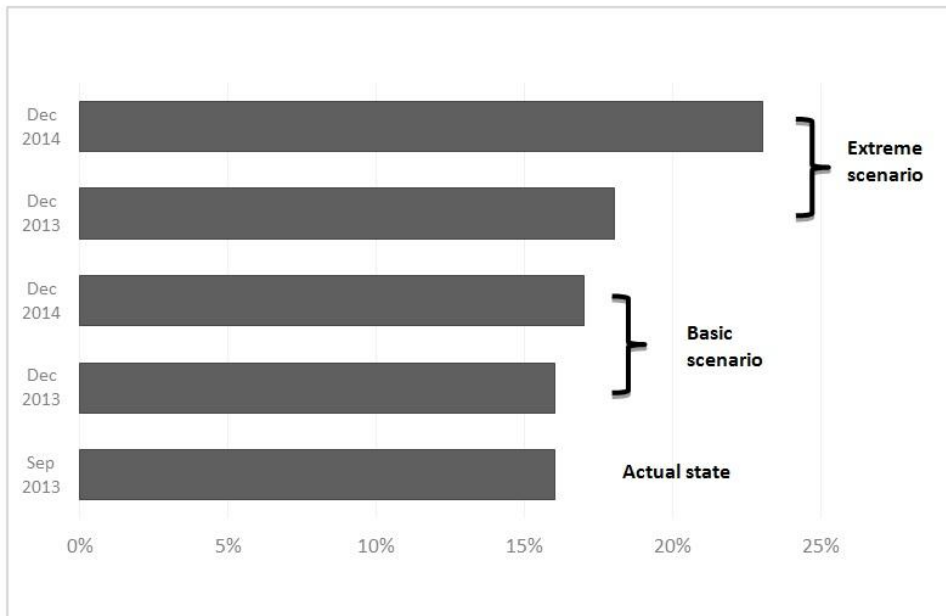
Deterioration in quality of the credit portfolio in the previous periods is especially emphasized in the real sector, in which the increasing share of NPLs to total loans was registered during the third quarter. In case of materialization of the predicted shocks, NPLs ratio for businesses increased by 3.6 percent until the end of 2013 and by additional 4 percent until the end of 2014.

The consequence of the assumed significant slowdown of the economy in the extreme scenario is increased in costs of funding due to the deterioration in quality of the loan portfolio. Significant financing costs increase has resulted in a negative financial result in most banks in the banking system. A number of small banks in the system, which are primarily oriented to the firms with small and medium businesses, stress test results have proven deterioration of financial results due to the predicted active interest rates for the whole banking system which are significantly lower than the average interest rates by which banks are placing their resources.

Figure 2: Indicators Movement
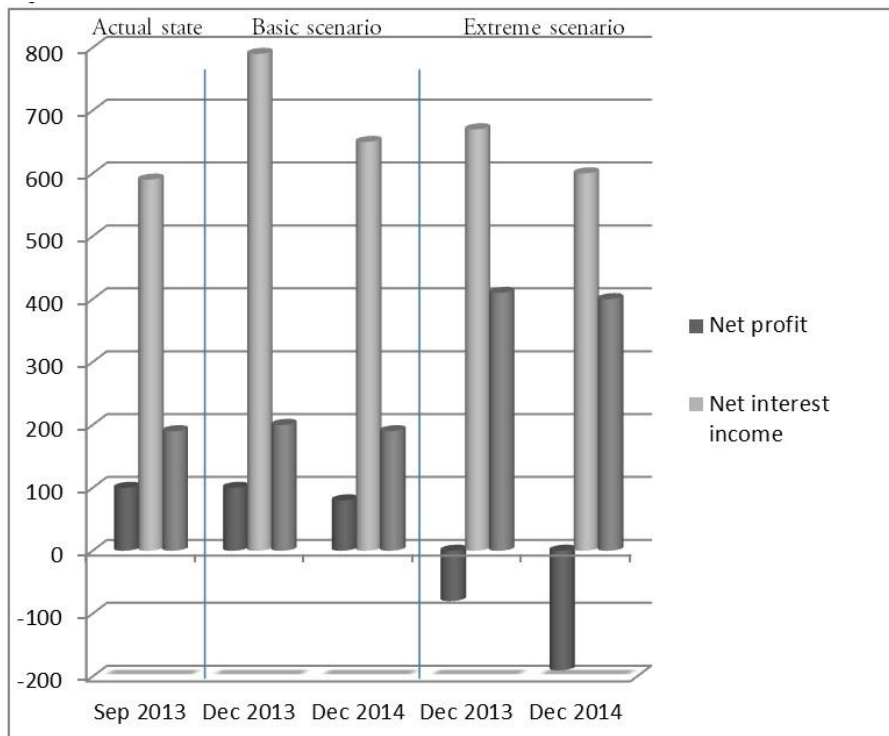
Source: Financial stability report 2013, Central Bank of Bosnia and Herzegovina

Financing method influences stress test results significantly. Banks which hold their adequate level of capitalization by having an additional capital, which consists of the sub ordinary debt mostly, are exposed to greater risks when we talk about financing the source stability. The assumptions from stress tests, which imply that subordinated debt will be paid, have a significant influence on the results in the sense of capitalization which results capital reduction in 2014.

Beside the increasing trend of NPLs, which was identified as the most significant weakness of the banking system in Bosnia and Herzegovina, a significant risk is caused by investing into domestic debt securities, firstly the public sector, as well as by significantly reducing the financing from abroad. Therefore it will be necessary to focus the attention on banks capitalization, especially to those which have significant investments into state debt securities, as well as following the effects of further deleveraging of foreign banks on the banking system.

The identified key weaknesses in Bosnia and Herzegovina's banking system will also be present in further periods. Therefore we can expect that the banks where the tests were conducted had recapitalization needs. If those banks don't undertake adequate actions in order to remove the identified weaknesses in further tests, these recapitalization needs will be shown, too.

Primarily, a correlation analysis between the above mentioned variables was conducted. In order to calculate direction and intensity, the Pearson's correlation coefficient was used (Somun - Kapetanović, 2008):

$$r = \frac{SSxy}{\sqrt{SSxx \cdot SSyy}}$$

Where:

$$SSxy = \sum (Xi - \overline{X})(Yi - \overline{Y})$$
$$\text{and}$$
$$SSxx = \sum_{i=1}^{n}(Xi - \overline{X})^2$$
$$\text{and}$$
$$SSyy = \sum_{i=1}^{n}(Yi - \overline{Y})^2$$

The calculation obtained the following:

Table 3: Correlation Matrix

	V3	V1	V2	V4	V5	V6	V7	V8
V3	1	.625**	.216	.991**	-.046	-.430*	.124	-.421*
V1	.625**	1	.567**	.580**	.294	-.589**	.215	-.693**
V2	.216	.567**	1	.111	.684**	-.884**	.336	-.853**
V4	.991**	.580**	.111	1	-.100	-.344	.099	-.347
V5	-.046	.294	.684**	-.100	1	-.577**	.276	-.597**
V6	-.430*	-.589**	-.884**	-.344	-.577**	1	-.382	.936**
V7	.124	.215	.336	.099	.276	-.382	1	-.345
V8	-.421*	-.693**	-.853**	-.347	-.597**	.936**	-.345	1

* Significant level 0.01; * *Significant level 0.05
Source: Authors' own work

In the above table, the correlation is visible as well as its direction and intensity between variables. The underlined values represent a strong positive correlation, while bolded values represent a strong negative correlation. If we talk about Capital adequacy, there are strong positive correlations with the return on assets, return on equity as well as with level of non-performing loans. That means that better capital adequacy leads to higher return on assets, higher return on capital but also to higher level of non-performing loans what isn't such good news. Therefore, it can be concluded that the banks with higher return on assets have better capital adequacy as well as the return on equity and vice versa. Also, there is strong negative correlation with Liquid asset to long-term liabilities.

When we consider NPLs there are strong positive correlations with the capital adequacy and the return on average assets. There are strong negative correlations with liquid assets to long-term liabilities and liquid assets to total assets. Hence, better capital adequacy and higher return on average assets lead to the increase in non-performing loans which represents a surprising relationship which causes a more detailed investigation. On the other hand, higher levels of non-performing loans decrease the liquid position of the bank, what was expected. Since payment problems increase, the liquidity problem also occurs.

The correlation of return on asset and return on capital as well as capital adequacy is strong positive. These mean that as the return on equity increases, the capital adequacy, as well as the return on assets, gets better. When we consider return on assets there is strong positive correlation with NPLs. This result is logical, especially if we take into consideration that more suspicious loans lead to higher risks and that increases the importance of assets.

Liquid assets to long-term liabilities as well as liquid assets to total assets negatively correlate with all analyzed variables except one. The positive correlation between these variables is a consequence of the same structure of ratios. Thus, the increase of liquid position of the bank leads to the decrease in all other ratios and vice versa. That means that banks have to find optimal strategy to balance between risk and liquidity. The ratio of total loans and assets positively correlates with all the variables except those which indicate liquidity. It was found that when the bank loan increases, the liquid position decreases.

Based on all the facts listed above we can conclude that the greatest positive correlation is noticeable between the return on assets and the return on equity. For this research, a relevant and an interesting correlation is the one between the level of non-performing loans and the return on average assets. Since this correlation is one of the main goals of this paper these variables regression analysis was employed in order to settle the model of impact and variables behavior. For the model presentation the following formula was used (Somun - Kapetanović, 2008):

$$y_{i=a+bx_i+u_i} \qquad Y_{i=\alpha+\beta x_i+\varepsilon_i}$$

While the Yi represents the value of the dependent variable, Xi the value of the independent variable, α and β are parameters which determine the intensity of the independent variable and random values. Our models, takes dependent variables such as: NPLs, Capital adequacy and Risk-weighted_asset and independent: ROA, NPLs, Risk-weighted_asset and Liquid_asset_to_short-term_liabilities. Therefore in following equations different causality models are presented. Since the detected correlations, we wanted to test the level of dependency between these variables. Therefore we have employed above mentioned formula for these variables and calculation results are presented below.

NPLs = -651.857 + 0.684*Risk-weighted_asset + 30.727

This means that if we increase the Risk-weighted asset for one unit, NPLs will increase for 0.684 units. That means that, taking into consideration the above mentioned correlation between variables, by increasing the average assets level of non-performing loans, one of the asset components also increases. The simultaneous increase of the non-performing loans leads to the increase in average assets as well as in bank risk exposures. Thus, if the average asset increases for one unit, the level of non-performing loans will, also, increase for 0.684 units. Further, as it was mentioned above, the significant correlation between the capital adequacy, the return on assets and the return on equity is noticeable. Therefore, the following model is defined:

Capital adequacy = 161.589 + 0.625*ROA + 5.368

Hence, if we increase the return on assets for one unit, the capital adequacy will increase for 0.625 units. This leads to the conclusion that better return on assets, as an indicator of efficacy and resources management, leads to better capital adequacy. The quite high correlation between the capital adequacy and the level of non-

performing loans require further research. Therefore, the following regression model as the first step in causality disclosure is defined:

$$\text{Capital adequacy} = 155.491 + 0.567 * \text{NPLs} + 5.667$$

By including the dependence of non-performing loans in this model, a more complicated but more precise, comprehensive and clearer model is defined:

$$\text{Capital adequacy} = 155.491 + 0.567 * (-651.857 + 0.684 * \text{Risk-weighted asset} + 30.727) + 5.667$$

An extremely negative correlation which prompted to determine the behavioral model is the one between the non-performing loans and the bank liquid position. Namely, the logical conclusion which is expected from the correlation matrix is that the increase in non-performing loans, followed by the increase in problems with debt collection, liquidity problems increase as well as the liquidity risk. Therefore, it can be concluded that the level of non-performing loans is the main determinant and entry of the liquidity risk.

$$\text{NPLs} = 518.421 - 0.884 * \text{Liquid\_asset\_to\_short-term\_liabilities} + 19.705$$

That means that the increase in ratio of liquid asset to short-term liabilities for one unit leads to the decline in the level of non-performing loans for 0.884 units. This is one of the proofs that better liquidity control leads to the decline in the level of non-performing loans followed by the better bank liquid position and liquidity risk reduction. Equally, risk-weighted average asset negatively correlates with the bank liquid position and that is defined through the following model:

$$\text{Risk-weighted asset} = -1312.1614 - 0.597 * \text{Liquid\_asset\_to\_total\_asset} + 367.826$$

Therefore, the increase in the indicator of the liquid position for one unit leads to the decline into risk- weighted asset for 0.597 units. Equally, the capital adequacy negatively correlates with the liquid position which is represented by the following model:

$$\text{Capital adequacy} = -210.162 - 0.693 * \text{Liquid\_asset\_to\_total\_asset} + 4.9585$$

The increase in the liquid position for one unit leads to the deterioration in capital adequacy for 0.693 units.

Discussion

According to the selected indicators of financial health in Bosnia and Herzegovina for the fourth quarter of 2013 non – performing loans to total assets was 11.43%. The loans represent 70% of total assets of the banking sector in Bosnia and Herzegovina. Therefore, the credit risk is the most common in total risks of the banking sector. Bearing in mind the size of the credit portfolio, the credit analysis and the measurement of its risk, a very careful approach is required in order to estimate and control the potential risks. By observing the ratio of total loans as well as the non-performing loans in Bosnia and Herzegovina banking sector, it can be noticed that the total loans have increased more rapidly than the non – performing loans.

Figure 3: Share of Non - Performing Loans in Total Loans
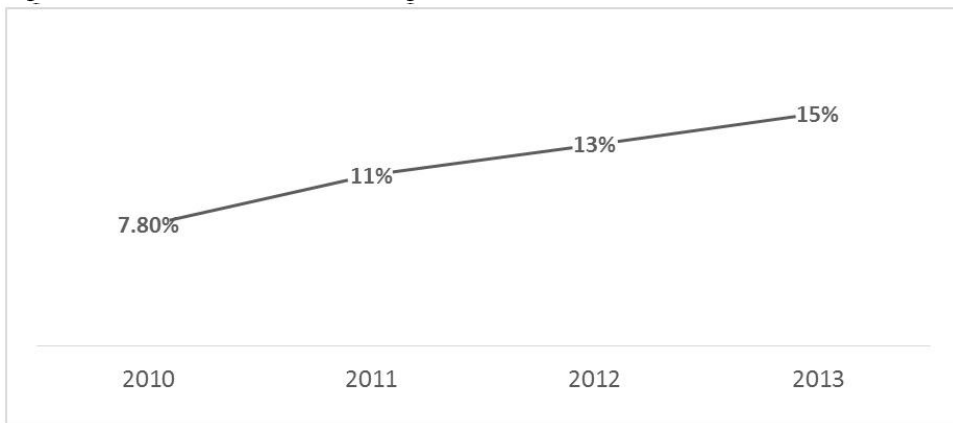
At the end of 2013 total loans were 16.4 billion BAM and they increased for 6.9% compared to 2012. The share of the non - performing loans in total loans at the fourth quarter of 2013 was 15.13% and it increased compared to the previous year where this indicator was 14.86%. In 2012 the value of this indicator was 13.47% which clearly indicates the fact that the asset quality is still the greatest source of risk to Bosnia and Herzegovina banking system.

In the fourth quarter of 2013 the indicator of return on average assets was -0.12% and it declined for 72 basis points according to the same period of the previous year. The decrease in value of this indicator was caused by the decline in the net profit of the entire system, followed by the slight increase of the average asset. The return on average equity in the fourth quarter of 2013 was -0.93% which is 5.84% lower according to the same period of the previous year. The decline in the net profit with the simultaneous increase of the average equity resulted in the decline of this indicator annually.

According to data for the fourth quarter of 2013 the three liquidity indicators of Bosnia and Herzegovina banking sector recorded the improvement of value according to the same quarter of the previous year as well as in accordance with the previous quarter of 2013 year. Liquidity indicators value improvement in the last quarter could be, potentially, explained by the advent that banks with foreign property withdrew resources from their parent bank at the end of the year. The indicator liquid assets to total assets on the level of the entire banking system was 26.35% and it was improved for 92 basis points according to the same quarter in the previous year and for 107 basis points according to the previous quarter of 2013. The improvement of this indicator is a consequence of a faster growth of the basic liquid asset to the short-term financial liabilities. This improvement indicates greater banking sector ability in short–term liabilities servicing. However, this increase could be temporary because of the advent that banks with foreign property withdrew resources from their parent bank at the end of the year and by the beginning of the year they returned these assets to their parent banks.

The indicator of the short–term financial liabilities to the total financial liabilities in the fourth quarter of 2013 recorded a slight improvement according to the previous quarter as well as in accordance with the same quarter of the previous year. The value of this indicator at the end of the fourth quarter of 2013 was 67.27% which is 43 basis points lower than in the previous quarter and 66 basis points lower than the same quarter of the previous year. The decrease in value was caused by higher increase of the long–term liabilities to short–term liabilities.

Table 4: Banking Sector Capital Adequacy

Stress test results	Basic scenario		Extreme scenario	
	2013	2014	2013	2014
Level of capital adequacy, %	17,8	17,7	16,7	156,6
Recapitalization needs, billion BAM	12,1	60,9	27,7	164,4
Number of banks which need recapitalization	4	7	6	11

Source: Financial stability report 2013, Central Bank of Bosnia and Herzegovina

Results presented in above table lead to the conclusion that Bosnia and Herzegovina banking sector is still well capitalized, even though some, mainly smaller, banks are facing capital adequacy problems.

Conclusion

In accordance with the temporary financial crisis it's impossible to talk about it without paying attention to one of the main causes - NPLs. Therefore the significance of this paper is in the fact that it shows an insight into the greatest problems to which banks are exposed – liquidity and stability. Thus, it's necessary to reconsider the correlations and mutual interactions between the banking risk indicators, the level of non-performing loans and the capital adequacy. Those disclosures can be the basis for problem solution and a good foundation for new procedures creation. So, these research results give a good insight to managers and can help them to develop better and more efficient risk management methods.

According to everything that is listed above, we can conclude that the banks in Bosnia and Herzegovina have to pay attention to the non-performing loans as one of the main threats to their liquidity and stability. The conducted analysis has shown the need for adequate credit monitoring in order to maintain the stable business and the trust of the depositors and ensure the long – term sustainability as well. The main limitation of this study is the multifactorial nature of the analyzed problem. Therefore, it requires further research in the sense of other factors influence, such as the state in the economy, inflation etc.

This analysis can be the basis for further research and causality examination. Further research can go into several ways. The first is the ratio analysis for each bank in Bosnia and Herzegovina and the second one is the analysis of these indicators for the

developing countries. Also, the analysis can be extended by macroeconomics factors involvement, such as GDP real growth, inflation index etc.

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[i] Value at risk - A statistical technique used to measure and quantify the level of financial risk over a specific period of time