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Preliminary communication

FINANCIAL SOUNDNESS INDICATORS IN BOSNIA AND HERZEGOVINA BANKING SECTOR

Kemal Kozaric[1]
Emina Zunic

Abstract
The purpose of this paper is to research financial soundness indicators in Bosnia and Herzegovina banking sector, their interconnections, causality and influenced factors. Therefore the subjects of analysis are core financial indicators. For that purposes data from International Monetary Fund for period 2008 – 2013th as well as data from state agencies and central bank were used. In order to gain research goal different scientific methods were used. Therefore, correlation and regression analysis were employed in order to reveal connectivity and causality between those factors. Results have shown that banks in Bosnia and Herzegovina still have to pay attention on non-performing loans as one of the main threats to their liquidity and stability.

Keywords: risk, indicators, banking, finance.

Jel Classification: G21

INTRODUCTION

A recent financial crisis has shown importance of appropriate risk management techniques. That has, also, emphasized role of adequate regulations according to risk aspects of each bank. Therefore, financial soundness indicators have become one of the main tools for bank business tracking. Theoretical and practical results imply positive relation between market expansion and 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. Emerging-market countries have only a precarious hold on wealth, but they are weaklings globally. When they get into trouble, they quite literally run out of money or at least out of foreign currency, without which they can't survive (Johnson 2009). The credit

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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, need is highlighted for a policy approach with emphasis on the opposite credit culture and lending policy designed with pertinent economic and financial factors (Mehamood, Zahid and Nisar 2013). Therefore, significance of financial soundness indicators monitoring arise.

FINANCIAL SOUNDNESS INDICATORS

Financial soundness indicators are the one which reflect the current financial health of financial institutions in a country. Those indicators are calculated and disseminated in support of macro prudential analysis that presents the assessment of strength and vulnerability of the financial system, in order to preserve financial stability, and in particular to prevent possible collapse of the financial system. The type and scope of the indicators that are compiled and disseminated varies across countries. Financial soundness indicators for depository institutions (especially basic set) are considered key indicators to analyze the status of any financial system. In Bosnia and Herzegovina Central bank is the main institution for financial soundness indicators compilation on the State level.

With the recommendation of the IMF, Central bank of Bosnia and Herzegovina began with a compilation of selected FSI exclusively for the banking sector, primarily because the share of this sector in the overall financial system. In order to calculate those indicators aggregation and data consolidation were used. Aggregation is the summarization of data, so that the overall position of one or transaction for any group of reporting units is equal to the sum of data for all individual units within the group. Consolidation refers to the elimination of transactions between group members in order to express financial situation and performance of the group as one of the accounting subject in relation to other businesses outside the group, for statistical purposes. Consolidation of data is carried out on a group and sector level. The group consists of basic bank (central) and all its organizational parts (branches, etc.).

Financial soundess indicators—foreign exchange risk

Financial soundness indicators, which measures exposures to foreign exchange risk are FSI's who follow the sensitivity of the financial sector to market risks or the sensitivity to movements in exchange rates, interest rates and capital markets. Compiled FSI's which measure foreign exchange risk are as follows:

a) Loans in foreign currency and indexed loans to total loans are an indicator that calculates the share of loans in foreign currency and indexed loans to total loans. In countries where lending in foreign currencies are allowed, especially is important to monitor residents' share of loans denominated in foreign currencies

in total loans, due to the increased risk of repayment of such loans in the context of a large devaluation or lack of earnings in foreign currencies.

b) Liabilities in foreign currencies to total financial obligations are one of auxiliary soundness indicator, and measure the relative importance of foreign sources of funding within the total liabilities. This indicator is necessary to observe together with the indicator loans in foreign currency and indexed loans to total loans; because the foreign exchange exposure of banks is less if the loans disbursed in foreign currencies are funded sources in foreign currencies. It is calculated as the ratio of liabilities in foreign currencies and the total financial obligations. It shows how the share of liabilities in foreign currencies in total financial obligations.
c) Net open position in foreign currencies in relation to the equity belongs is one of basic FSI's. It is calculated as the ratio of net foreign exchange position and basic capital (Tier 1). Net foreign currency position is calculated as the sum of the values of all long and all short positions of individual banks. Individual foreign currency position is calculated as the sum of the amounts of assets items taken from the plus sign and liability items taken from the minus sign. Individual foreign currency position (open position) is the difference between items that relate to a particular foreign currency (including gold and other precious metals) in the assets and liabilities of the bank balance expressed in domestic currency (BAM), including the potential gain or loss.

Financial soundess indicators—asset quality

To measure the quality of assets compiled FSI are as follows[2]:

a) Non-performing assets (NPA) to total assets measures the asset quality of the banking sector, and the participation of non-performing assets to total assets. NPLs accounted for the largest portion of poor quality asset and therefore this indicator gives a good picture of the quality of the loan portfolio.
b) NPA less net of provisions to the equity shows the proportion of non-performing assets not covered by the provision of basic capital, and provides indications of additional provisions which could be taken to the existing NPA. It is important indicator of the ability of bank capital to absorb losses arising from non-performing loans.
c) 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.

Financial soundess indicators—profitability

To measure profitability, compiled FSI is as follows:

a) Return on average assets (ROAA) is an indicator of a set of basic indicators financial soundness indicators and is intended to measure banks' efficiency in

[2] Proposed by IMF, adopetd and adjusted by Central bank of Bosnia and Herzegovina

using its assets. This FSI provides an estimate of profit that can be used to cover losses in relation to assets. ROAA is calculated as the ratio of net income to average total assets.

b) Return on average equity (ROAE) measures the efficiency of banks in the use of capital. This FSI provides an average income that can be used to cover losses in relative to capital. ROAE is calculated as the ratio between net income and average capital.
c) Net interest income to total income is calculated as the ratio of net interest income and total income. Net interest income is the difference between total interest income and total interest expense.
d) Non-interest expenses to gross income measures the share of administrative costs in total revenue. This FSI is calculated as the ratio of non-interest expense and total revenue. The non-interest expenses include direct expense (cost value adjustments for items of the balance of risk and risk reserves for items and other off-balance sheet business and direct expenses) and operating expenses (salaries and expenses contributions, the cost of office space, other fixed assets and overheads and other operating costs).

Financial soundess indicators—capital

Indicators that measure capital adequacy are[3]:

a) Basic capital to total risk weighted is used to determine how the indicator of net capital to total risk weighted susceptible to changes in additional capital and regulatory reductions. Capital adequacy is measured by this indicator is calculated as the ratio of basic capital (Tier 1) and total risk-weighted, which consists of RWA and operational risk weighted (ORW).
b) Net capital to total risk weighted corresponding to methodology capital adequacy ratio (CAR) calculating, which is prescribed by Basel Core Principles for internationally active banks in the G10 countries, except that the calculation and analysis of capital does not include the impact of country risk and transfer risk. The capital adequacy ratio measured by this indicator is calculated as the ratio of net capital and total risk-weighted.
c) Although the prescribed CAR for internationally active banks to Basel Core Principles is 8% or more, the existing regulations in Bosnia and Herzegovina require this rate to be at least at 12%.

Financial soundess indicators — liquidity

FSI liquidity are[4]:

a) Liquid assets to total assets show how the banking sector is sensitive to liquidity crisis, and how it is able to meet the expected and unexpected demand for cash.

[3] Proposed by IMF, adopetd and adjusted by Central bank of Bosnia and Herzegovina
[4] Proposed by IMF, adopetd and adjusted by Central bank of Bosnia and Herzegovina

b) Liquid assets to short-term financial obligations as an indicator that measure liquidity mismatches of assets and liabilities, and gives an indication of the extent to which banks can withstand the withdrawal of short-term funds, and that they do not face with liquidity problem.
c) Short-term liabilities to total liabilities are short-term measure of participation in the total obligations, and represent a measure of liquidity risk caused by an unexpected increase in the share of total short-term financial obligations. It is calculated as the ratio of short-term liabilities to total liabilities.

METHODOLOGY AND DATA SOURCES

In order to analyze financial soundness indicators different scientific methods were used. Quantitative methods are dominant in order to estimate influence and interconnections between these financial soundness indicators. For that purpose different statistic methods were used such as correlation and regression analysis. Further causal and functional analysis were used. Causal analysis was used in order to reveal interconnection between certain financial soundness indicators. Functional analysis was used to understand of relationship and causality in between above mentioned factors.

In order to reveal state and potential threats research was conducted among Bosnia and Herzegovina banking sector. In that purpose secondary data (Core Financial Indicators) for period 2008–2013th were used. The same indicators which have been presented at theoretical part of paper were subject of analysis and causality examination in empirical part of research. For that purpose above mentioned statistical methods were obtained above these indicators. To make more concise conclusion data from state agencies and central bank were, also, subject of analysis.

EMPIRICAL RESULTS

Although the level of capitalization in banking sector at the end of the fourth quarter of 2013th was satisfactory, it was also noticeable an increase in both indicators of capital adequacy in relation to the previous quarter and idiosyncratic risks from period to period are becoming more pronounced. According to data from the end of the fourth quarter of 2013th in one bank recorded lower capital adequacy ratio prescribed by the regulatory minimum, while in the case of a few banks there is a justified fear of decrease in level of capitalization due to the pronounced credit risk. Prolonged period of economic stagnation and credit activities could lead to a further deterioration in the credit quality of the portfolio, which, by taking into account the current relatively high proportion of non-performing loans to total loans, and a significant portion which is not covered by reserves for credit losses, could lead to a deterioration in capitalization indicators the level of the entire banking sector.

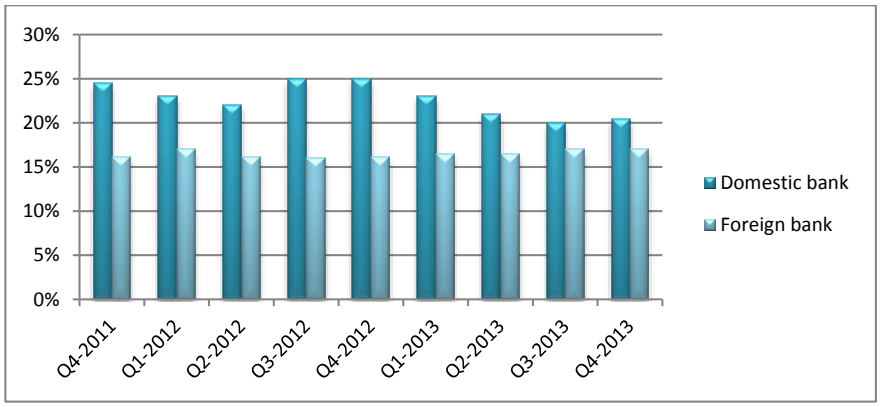

Figure 1. Net capital to total risk weighted

The fourth quarter of 2013th was marked by continued negative trend when it comes to asset quality. All indicators used to measure asset quality indicate decrease in asset quality of Bosnia and Herzegovina banks, especially loans. Although the growth of non-performing assets is primarily the result of unfavorable macroeconomic trends. By the analysis of data by banks, it is clear that the deterioration in asset quality further contributed to inadequate credit policies of individual banks, and that idiosyncratic character of the growth in non-performing assets.

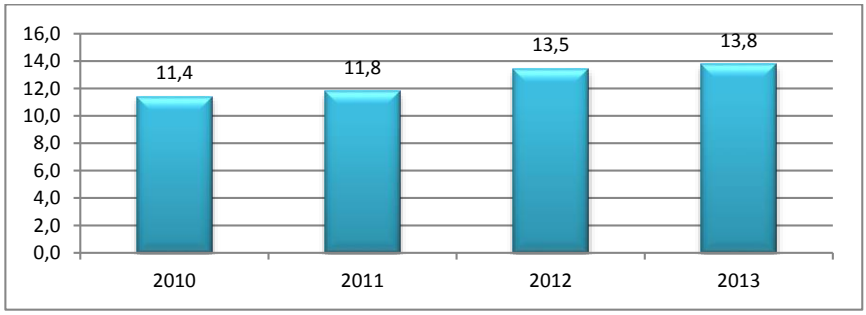

Figure 2. Share of NPLs in total loans

In the fourth quarter of 2013th liquidity ratios continued to grow. Although the liquidity position in the banking system improved, two systemically important banks recorded a deterioration of liquidity indicators. Further deterioration in the liquidity position in the two banks could cause problems with liquidity in the system and cause a negative reaction from local depositors. In addition, the weak macroeconomic conditions and lending activities increasing non-performing loans could further affect the weakening liquidity position of a number of banks.

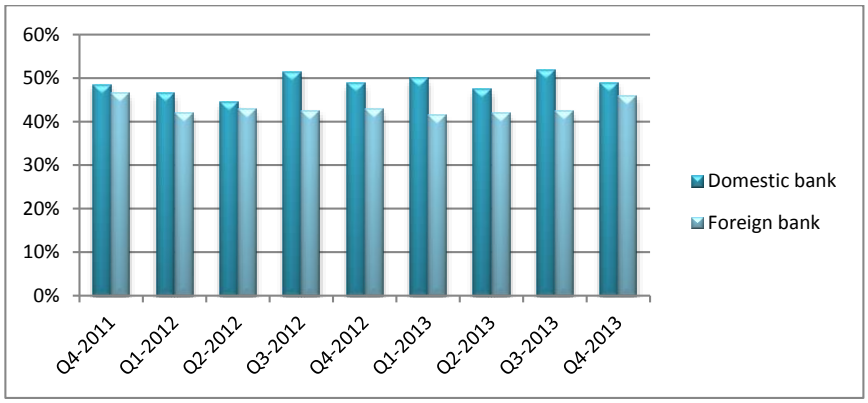

Figure 3. Liquid asset to short-term liabilities

Although the value of the indicators do not point to foreign exchange risk, changes in operating policies of banks in future periods could result in foreign exchange mismatch of assets and liabilities. It is the mismatch between foreign currency assets and liabilities can be considered as the largest foreign exchange risk in B&H, given that the largest share of loans in assets linked to foreign currency to the Euro.

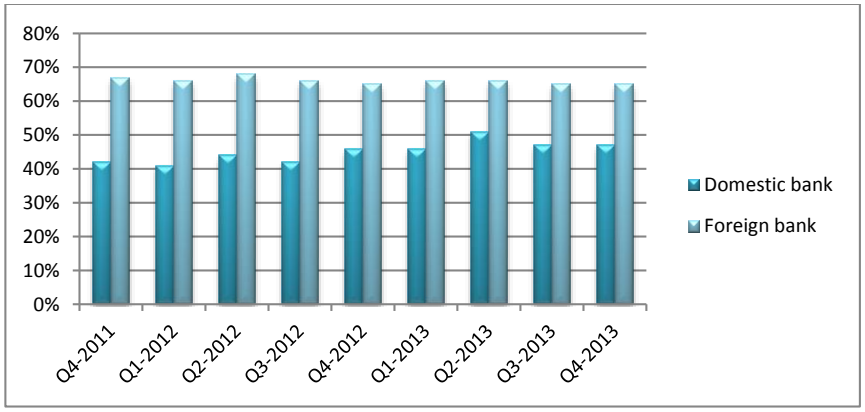

Figure 4. Liabilities denominated in foreign currencies to total liabilities

In order to reveal potential correlation and interdependences between above mentioned factors correlation and regression analysis were used. Therefore following variables were used: return on equity (ROE), capital adequacy (Cap_adeq), return on asset (ROA), non-performing loans (NPLs), risk-weighted asset (RWA), liquid asset to short-term liabilities (Liq_asset_short_liab), loans to total asset (Loans_asset), liquid asset to total asset (Liq_asset_asset).

Correlation results indicate on extremely strong correlation between ROA (.991**), Cap_adeq (.625**) and ROE (.580**). This leads to conclusion that banks with higher return on assets have better capital adequacy as well as return on equity and vice versa. This analysis has shown negative correlation between ROA (-.430*),

Liq_asset_short_liab (-.589**) as well as Liq_asset_asset (-.693**). It can be concluded that increase in return on assets, as one measure of profitability and efficacy, lead to decline in bank liquid position and liquidity risk increase what confirms necessary of balancing between efficacy and liquidity in banks. Further, NPLs positively correlated with Cap_adeq (.567**) and RWA (.684**), while extremely negatively correlate with Liq_asset_short_liab (-.884**) and Liq_asset_asset (-.853**). With increase in level of non-performing loans decrease liquid position of the bank what was expected. Since payment problem increase thus liquidity problem also occurs. Extremely positive correlate is noticeable between ROE (.991**), Cap_adeq (.580**) and ROA (.991**). This means that as the return on equity increase, capital adequacy as well as return on assets is getting better. Extremely positive correlation has been noticeable between RWA and NPLs (.684**). This result was expected because more suspicion loans lead to higher risk and follow by that increase in ponder for assets and RWA.[5]

In order to reveal influence between above correlated variables regression analysis was employed. Therefore, following relations were obtained: NPLs and Cap_adq, NPLs and Liq_asset_short_liab, NPLs and RWA as well as Cap_adeq and RWA. Following tables present regression analysis results.

Table 1. Regression analysis result – NPLs

Dependent variable: Capital_adequacy	Coefficient	Standard error	T - value	P - value
Constant	155.491	2.816	55.210	.000
NPLs	.093	.028	3.300	.003

Above table present results of relation between non-performing loans and capital adequacy and indicates on strong relation between these two variables. By increase in level of NPLs for one unit, capital adequacy increase for 0.093 units.

Table 2. Regression analysis result – bank liquid position

Dependent variable: NPLs	Coefficient	Standard error	T - value	P - value
Constant	518.421	47.240	10.974	.000
Liquid_asset_to_short-term_liabilities	-.888	.098	-9.060	.000

When the relation between NPLs and bank liquid position is subject of analysis, as it is presented at above table, it can be concluded that increase in ratio of liquid asset to short-term liabilities for one unit leads to decline in level of non-performing loans for 0.888 units. This means that better liquidity control leads to decline in level of non-performing loans and followed by that better bank liquid position and liquidity risk reduction.

[5] * Significant level 0.01; * *Significant level 0.05

Table 3. Regression analysis result – RWA

Dependent variable: NPLs	Coefficient	Standard error	T - value	P - value
Constant	-651.857	165.526	-3-938	.001
Risk-weighted_asset	.684	.000	4.497	.000

Results presented in above table means that by increase in risk-weighted assets, level of non-performing loans as one of asset component also increase. Thus, if the risk-weighted asset increases for one unit level of non-performing loans will increase for 0.684 units.

Table 4. Regression analysis result – capital adequacy

Dependent variable: Capital_adequacy	Coefficient	Standard error	T - value	P - value
Constant	111.709	35.408	3.155	.004
Risk-weighted_asset	.294	.000	1.478	.153

When the relation between capital adequacy and risk-weighted asset is subject of analysis, as it is presented at above table, it can be concluded that increase in risk-weighted asset for one unit leads to increase in capital adequacy for 0.294 units.

CONCLUSION

According to selected financial soundness indicators in Bosnia and Herzegovina credit risk is the most common in total risks of banking sector. Bearing in mind size of credit portfolio, credit analysis and measurement of its risk, require very careful approach in order to estimate and control potential risks. By observing ratio of total loans as well as non-performing loans in Bosnia and Herzegovina banking sector it can be noticed that total loans have increased more rapidly than non – performing loans.

It was found that increase in return on assets, as one measure of profitability and efficacy, lead to decline in bank liquid position and liquidity risk increase. This is one of the proofs for necessary of balancing between efficacy and liquidity in banks. Further, it was revealed that increase in level of non-performing loans, caused by payment problems, increase liquidity problem also. By increase of risk-weighted assets level of non-performing loans as one of asset component as well as capital adequacy also increases. Revealed relation between non-performing loans and capital adequacy indicates on strong relation between these two variables. It was founded that Bosnia and Herzegovina banking sector is still well capitalized, even though some, banks are facing to capital adequacy problems.

Based on all listed above, we can conclude that banks in Bosnia and Herzegovina still have to pay attention on non-performing loans as one of the main threats to their liquidity and stability. Analyzed financial soundness indicators have shown need for adequate monitoring of these values and their interdependences in order to maintain stable business and trust of depositors. This research is basis for further researches from this field in Bosnia and Herzegovina as well as in other developing countries.

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