THE EFFECT OF LIQUIDITY RISK ON FINANCIAL PERFORMANCE

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Abstract

This paper aims to study the impact of liquidity risk on the performance of banks in Kosovo, for a period of six years. The analysis is based on linear regression. Liquidity risk indicators refer to the ability of the bank to absorb the liquidity shocks, L2 - the ability of the bank to cope with a high liquidity demand in the short term and L3 - the ability of the bank to face liquidity risk in the presence of non-liquid assets, while return on assets ROA and return on equity ROE are the determinants of performance. The results show that there is a positive and significant relation between liquidity risk and performance of the banks and concluded that commercial banks in Kosovo could raise the level of performance by improving their ability to cope with the liquidity shocks risk, the short-term liquidity risk and the risk from the presence of large non-liquid assets.

Key Words

Performance of the banks; liquidity risk; commercial banks.

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INTRODUCTION

The banking system plays an important role in economic development and financial stability of the country. Kosovo as a developing country during 2007 - 2008 had a rapid development in the banking sector, which contributed to the high level of competition (Luboteni, 2013). The banking system in Kosovo, after the war, is characterized by the entry of foreign banks into the market, which led to higher security of deposits and greater customer confidence. These two elements contributed the Republic of Kosovo to develop financial stability.

The structure of the financial system in Kosovo continues to be dominated by the banking sector, which represents 69.0 percent of the total assets. Foreign-owned banks also continue to dominate the banking sector, from ten licensed banks operating in the country, eight of them are foreign-owned. Foreign-owned banks in 2015, managed 90.1 percent of the total assets and claimed 92.5 percent of the total capital of the banking sector. Five of foreign-owned banks, have the country of origin Austria, Germany, Slovenia, Albania and Serbia, while three others have the country of origin Turkey. In the banking sector also operate two locally owned banks.

As a result of the last financial crisis in 2008, and changes in the banking system, commercial banks are faced with increased operating costs, which may have affected the quality of bank loans and the performance of the banking sector in Kosovo (Balaj, 2015).

Since banks are businesses that face high risks like that of liquidity, credit, etc., risk management is vital to maintaining their positions in such intense competition in this industry.

Investors when investing their money do not appreciate the highest capital ratio of the bank even though it has an impact on reducing the banking risk (Šustorova, Teply, 2014).

According to the Central Bank's report, the liquidity of banks in Kosovo is stable, a higher systematic liquidity can hinder the transmission of monetary policy and the development of financial markets.

In order to control and raise the performance of banks in Kosovo liquidity risk management is very important. Therefore the objective of this paper is to examine the impact of liquidity risk on the performance of banks in Kosovo. Definition of variables is done based on contemporary literature. Within the model as dependent variables we determined the return on assets (ROA) and return on shareholder's equity (ROE), influenced by liquidity indicators, in this case we have: L1 the ability of the bank to absorb the liquidity shocks, L2 - the ability of the bank to cope with a high liquidity demand in the short term and L3 - the ability of the bank to face liquidity risk in the presence of large non-liquid assets.

LITERATURE REVIEW

Performance of banks

Commercial banks are the main pillars in the maintenance of a stable economic and financial system, especially in developing countries, where bank loans have an important role in country's development (Lubeteni, 2006). Therefore we can say that the performance of banks is principal influencer of economic and financial stability of any country. Nowadays banking institutions have become more complex, main drivers of their performance remain income and efficiency (European Central Bank, 2010). Performance of banks includes profitability, liquidity, solvency, financial efficiency and repayment capacity (King'ang'ai, 2016). The report of European Central Bank states that bank performance represents the capacity of banks to generate sustainable revenues. This source sees profitability as first line of defense from unexpected losses, since, as each bank strengthens capital can also increase the benefits from investments and retained earnings.

Determinants of banks performance were investigated by author (Ongore, Kusa, 2013) who confirmed that the capital adequacy, asset quality and efficient management significantly affect the performance of commercial banks, on the other hand stated that liquidity has no significant effect on the performance of commercial banks. Research on the performance of banks also conducted authors (Singh, Tandon, 2012) who compared the performance of public bank (SBI), which is the leading bank in the public sector in India, with the second largest bank (ICICI) which is the leading bank in the private sector. The authors confirmed that the public bank (SBI) performs better and is healthier financially than private bank (ICICI), while in the context of the management of deposits and expenditures, private bank (ICICI) has managed more efficiently than public bank (SBI). Other researches on the determinants of bank performance were conducted by the authors (Heffernan, Fu, 2010), (Saliha, Abdessatar, 2011), (Tripathi, Meghani, Mahajan, 2014) and (Ayyappan, Sivaraman, Sakthivadivel, 2014) etc.

A very important element of the bank's performance is the capital structure. Author (Vătavua, 2015) researched the impact of capital structure on the performance of companies, by analyzing 196 Romanians manufacturing companies listed on the Bucharest Stock Exchange. He analyzed the relationship between performance of companies and capital structure. As representatives of the capital structure in the model he set long-term debt, short-term debt, total debt and total capital, while return on assets and return on equity as representative of performance. In the end he proved that the performance of Romanian companies is higher when they avoid debt and act based on capital.

Studies regarding the factors that influence the performance were conducted also by Muiruri, Ngari (2014). In their research about the impact of financial innovations in performance, they proved that financial innovations have had a major impact on the financial performance of banks. Based on the literature review we found that non-interest income also have a

link with the performance of banks, however more affordable link have interest income. An opposite relation between credit risk management and performance of the bank confirmed the author (Poudel, 2012) in his research "The impact of credit risk management in the financial performance of commercial banks in Nepal", which recommended that banks should not only formulate strategies to minimize the exposure of banks to credit risk, but also to increase profitability. Whereas author (Mondal, 2012) in his study suggested that the bank could increase its profitability through appropriately managing intellectual abilities.

Liquidity risk

The global financial crisis in recent years reminded that liquidity management is very important for the functioning of financial markets and the banking sector, so many authors dealt with the analysis of credit risk and the performance of banks. Although liquidity risk in many researches is considered as exogenous factor determining the performance of the bank, the author in his research "Banks liquidity risk and performance", considered liquidity risk as endogenous factor determining bank performance. Also authors (Rudhani, Ahmeti, Rudhani, 2016) in their research "The Impact of Internal Factors on Bank Profitability in Kosovo "treated liquidity risk as internal factor determining banks performance. They confirmed a negative correlation between liquidity risk and profitability of banks and concluded that commercial banks can increase their level of profitability by increasing the level of lending and other investments, while managing well their risks and liquidity.

  Liquidity risk is treated as internal factor determining performance of the bank also by authors (Chen, Shen, Kao, Yeh, 2018) who confirmed a negative correlation between liquidity risk and performance of banks in the financial system based on market. The authors showed that causes of liquidity risk include components of liquid assets, dependence on external funding, supervisory and regulatory factors and macroeconomic factors.

  Capital adequacy, interest rate loans, problematic loans and interbank transactions have a positive impact on the liquidity of banks, while negative impact on liquidity have inflation, business cycles and financial crises (Vodová, 2011).

  Vodova (2013) in his research "Liquidity Ratios of Polish Commercial Banks" did an assessment on Polish banks' liquidity during the crisis, and proved that during this time only a few banks have funded their lending activity from deposits of their clients. Most banks have needed other sources of funding, such as loans from banks or other debt funds, such as the issuance of securities, which has increased their vulnerability.

  Liquidity metrics and also best practices on measures against liquidity risk are focused on the use of liquidity ratios. From the literature we see that a liquidity metric is a ratio between liquid assets over total assets liquid assets to deposits ratio (Shen, 2001) and liquid assets over customer deposits and short-term financing (Kosmidou, 2005). The highest value of liquidity ratio makes the most liquid banks less vulnerable to failures.

Research shows that in addition to liquidity risk, the bank's performance is also affected from other factors such as market structure factors, supervisory factors and macroeconomic conditions.

METHODOLOGY

Sample
Sample for the econometric analysis includes secondary sources, such as balance sheet and income statement for the nine banks[1] which operate in Kosovo in the period 2010-2015 with a total of 47 observations. Banks that make up the sample of the paper are as follows: NLB Bank, Banka per Biznes, Turkiye Cumhuriyeti Ziraat Bankasi Kosovo, Banka Ekonomike, Raiffeisen Bank Kosovo, Procredit Bank, TEB SH.A, Banka Tregtare Kombëtare – Kosovo, Turkiye Is Bankasi. Data were obtained from annual reports, audit reports and financial statements of banks published on their official web sites.

Study of Variables
In this research were chosen two measures of performance as dependent variables. Return on assets (ROA), net income to total assets ratio, and return on equity (ROE), net income to total equity ratio (Ongore,O.V., & Berhanu Kusa,B.G., 2013). Whereas as liquidity risk metrics are used: L1 the ability of the bank to absorb the liquidity shocks, L2 - the ability of the bank to cope with a high liquidity demand in the short term and L3 - the ability of the bank to face liquidity risk in the presence of large non-liquid assets.

Description of variables

Performance metrics
ROA – the ratio of net income to total assets measures the ability of the bank or the efficiency of bank's management to generate revenues using its available capital;
ROE – the ratio of net income to equity measure the rate of return earned on invested funds using shareholders'.
While independent variables used in the model are liquidity metrics used by authors (Bilal, 2016) and (Vodová, 2011)

Liquidity risk metrics
L1 – the ratio between liquid assets (current assets or short-term assets) and total assets give us information about liquidity shocks - total absorption capacity of a bank. A high ratio means a greater ability of the bank to absorb shocks;

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[1] In the analysis is not included only the bank which operates in northern Mitrovica, due to the impossibility of obtaining data.

L2 – the ratio between liquid assets (current assets or short-term assets) and liquid liabilities (current liabilities or short-term liabilities); this ratio measures bank's ability to withstand a high demand of short-term liquidity. A high ratio means that the bank is solvent in the short term;

L3 – the ratio between loans over deposits and current liabilities measures the relation between non-liquid assets and liquid liabilities. The higher the ratio less liquid the bank is.

Table 1: Summary of variables

Description	Symbol	Calculation method
Dependent variables		
Return on assets	ROA	Net income / total assets
Return on equity (capital)	ROE	Net income / total equity
Independent variables		
The ability of the bank to absorb the liquidity shocks	L1	Liquid assets / total assets
The ability of the bank to cope with a high liquidity demand in the short term	L2	Liquid assets / liquid liabilities
Liquidity risk in the presence of large non-liquid assets	L3	Loans / deposits & short-term liabilities

Source: Own survey.

HYPOTHESIS OF THE STUDY AND ECONOMETRIC MODEL

The purpose of this study is to examine a significant relation between liquidity metrics and bank's performance metrics and the impact of liquidity risk on the performance of commercial banks in Kosovo.

   In the framework of this study based on the research objective, we set up a hypothesis and three sub-hypotheses, which we will test through correlation and linear regression.

H1: Liquidity risk has a significant impact on the performance of banks in Kosovo.

Under this hypothesis, we have established three sub hypothesis as follow:
  – The bank's ability to absorb the liquidity shocks has a significant link with the performance of banks in Kosovo;
  – The bank's ability to withstand liquidity risk in the short-term has a significant relationship with the performance of the bank;
  – The bank's ability to face risks from the presence of large non-liquid assets has a significant connection with the performance of the bank;
  – In the econometric models established below, as dependent variables we defined the return on assets (ROA) and return on

shareholder's equity (ROE), influenced by liquidity indicators, in which case we have defined as independent variables: L1 the ability of the bank to absorb the liquidity shocks, L2 - the ability of the bank to cope with a high liquidity demand in the short term and L3 - the ability of the bank to face liquidity risk in the presence of large non-liquid assets.

First model: $\qquad$ **$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$**
Second model: $\quad$ **$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$**

Y_1 = ROA (net income / total assets);
Y_2 = ROE (net income / total capital);
$\beta_0 - \beta_3$ = the regression coefficient;
X_1 = L1 (liquid assets / total assets);
X_2 = L2 (liquid assets / short-term liabilities);
X_3 = L3 (loans / deposits and short-term liabilities);
μ = standard deviation (coefficient of error)

THE RESULTS OF EMPIRICAL ANALYSIS

Before we present the results and confirmation of hypotheses, the following table presents the results of regression models one and two, through two indicators VIF and tolerance or F-test. F-test explains the relation between the independent variables through tolerance and VIF values. From the data presented in the table no.2 we see that the highest value of the VIF is 4,252, which is within norms because it is lower than 10, the lowest tolerance is 0.235, which is higher than 0.10 the lowest limit of allowed values. Since the values are within the permitted boundaries regression models I and II are acceptable, and confirmed that the independent variables L1, L2 and L3 do not have any correlation with each other.

Table 2: Impact of variance factor F-test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	L1	.235	4.252
	L2	.277	3.610
	L3	.727	1.375
Dependent Variable: ROE			
Dependent Variable: ROA			

Source: Own survey.

Tables 3 and 4 present the summary of first and second model through indicators R, R^2, R^2 adjusted and standard error. Based on results we see

that in the first model R value is 1000, the value of R² is 1000 and the value of R² adjusted is 1.000. If R² adjusted is presented in percentage we can conclude that 100% percent of changes in ROA is explained by the independent variables L1, L2 and L3. The same results are in the second model. When the adjusted R² is presented in percentage we can conclude that 100% of changes in ROE is explained by the independent variables L1, L2 and L3. From this outcome we can conclude that all the changes in the bank's performance could be explained by liquidity indicators.

Table 3: Summary of the first model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1.000	1.000	.01300
Predictors: (Constant), L3, L2, L1				
Dependent Variable: ROA				

Source: Own survey.

Table 4: Summary of the second model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1.000	1.000	.09475
Predictors: (Constant), L3, L2, L1				
Dependent Variable: ROE				

Source: Own survey.

Statistical values for each independent variables in the first model are shown in table no. 5. The results of Beta coefficient for the independent variables are: L1 = .004, L2 = .003 and L3 = 1.001. This shows that the highest impact on ROA, based on the amount of Beta coefficient, has L3, L2 then L1. On the other hand, the significance level, presented in the last column of the same table for the first independent variable L1 is 0.000, which means that it is less than $p < 0.05$. Significance level is 0.000 for L2 and L3 as well. From this result we can conclude that liquidity risk has a significant impact on ROA the same results had the other authors as well (Mariaa,P., & Eleftheriab,G., 2016), (Musembi,m.D., Ali,B., Kingi,W., 2016)(Rahman, A.N, & Saeed,H.M, 2015).

The results of the second regression model are shown in table no.6, where we can see that Beta coefficient for variables L1 is .018, L2 = .011 and L3 is 1.00. Based on the level of Beta coefficient we can conclude that the highest impact on ROE has variable L3 then two other variables L1 and L2. In this model, the values of significance level for independent variables L1 and L3 are 0.000, while for L2 is 0.012, which means that it is within the allowed values of $p < 0.05$, confirming that the risk of liquidity has a statistically significant impact in ROE. The same results had the other authors as well (Hakimi,A., & Zaghdoudi,K., 2017), (Chowdhury,M., & Zaman,Sh., 2018).

Based on the regression results of the two models we can conclude that H:1 is confirmed, and that the liquidity risk has a significant impact on the performance of banks in Kosovo.

Table 5: Regression coefficients of the first model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.012	.005		-2.471	.018
	L1	-.124	.024	-.004	-5.138	.000
	L2	.007	.001	.003	4.816	.000
	L3	.101	.000	1.001	6.566	.000
Dependent Variable: ROA						

Source: Own survey.

Table 6: Regression coefficients of the secodn model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.176	.035		5.089	.000
	L1	-.671	.176	-.018	-3.820	.000
	L2	.028	.011	.011	2.624	.012
	L3	.115	.000	1.005	385.547	.000
Dependent Variable: ROE						

Source: Own survey.

Through the results of correlation we will test three sub hypotheses raised above. Based on the results of table no. 7, where performance of bank (ROA - return on assets and return on equity ROE) is set in relation with the bank's ability to cope with the liquidity shocks, we see that the significance level $p = 0.000$, which is less than 0.01, meaning that there is a statistically significant relationship between bank's performance and L1. The value of the Pearson coefficient shows the strength of the correlation, and in the table no.7 we can see that the variable ROA is $r = 0499$, while ROE is $r = 0494$, which means that the performance of banks has a very strong correlation $r > 0.49$, and also from signs we understand that the relation between them is positive. The same results were the authors (Chowdhury,M., & Zaman,Sh., 2018). Through this we confirm the first hypothesis, which states that the bank's ability to absorb the liquidity shocks has a significant correlation with the performance of banks in Kosovo

Table 7: The correlation between the bank's ability to absorb the liquidity shocks (L1) with the performance of banks (ROA & ROE)

Correlations		L1	ROA	ROE
L1	Pearson Correlation	1	.499[**]	.494[**]
	Sig. (2-tailed)		.000	.000
	N	47	47	47
** Correlation is significant at the 0.01 level (2-tailed).				

Source: Own survey.

Table no.8 shows the relationship between the bank's ability to withstand liquidity risk in the short-term (L2) with the performance of banks (ROA and ROE). From the outcome of the correlation analysis we see that the significance level of return on assets and return on equity is p=0.020 and p=0.019 respectively, a result that is within the allowed value p<0.05, which shows that the link is significant and proves the second hypothesis, concluding that the bank's ability to withstand liquidity risk in the short-term has significant correlation with the performance of bank. On the other hand, Pearson correlation values for ROA and ROE are r=0341 and r=0339 respectively, which lead us to conclude that the return on assets, return on equity and the bank's ability to withstand liquidity risk in the short-term have average positive correlation. The same correlation was confirmed by the author by. (Vodová, 2011).

Table 8: The correlation between the capacity of banks to withstand the liquidity risk in the short-term (L2) with the performance of banks (ROA, ROE)

Correlations				
		ROA1	ROE1	L2
L2	Pearson Correlation	.341[*]	.339[*]	1
	Sig. (2-tailed)	.019	.020	
	N	47	47	47
* Correlation is significant at the 0.05 level (2-tailed).				

Source: Own survey.

Last but not least, is presented the relation between the bank's ability to face risks in the presence of large non-liquid assets (L3) and the performance of banks (ROA, ROE). Results from the correlation prove a strong connection and with high statistical significance between bank performance and the last indicator of liquidity risk L3. This correlation is confirmed through significance level p=0.000, where p<0.01 and r=1, confirming the last sub hypothesis c. The bank's ability to face risks in the presence of large non-liquid assets has a significant, strong and positive relationship, with the performance of banks. the same result was confirmed by the authors (Vodová, 2011).

Table 9: The correlation between the bank's ability to face risks in the presence of large non-liquid assets (L3) with the performance of banking (ROA, ROE)

Correlations				
		ROA	ROE	L3
L3	Pearson Correlation	1.000[**]	1.000[**]	1
	Sig. (2-tailed)	.000	.000	
	N	47	47	47
** Correlation is significant at the 0.01 level (2-tailed).				

Source: Own survey.

CONCLUSION

During the period 2010-2016 the impact of liquidity risk was statistically significant on the performance of banks in Kosovo, a result that met the first objective of this research.

Through the empirical analysis we concluded that three independent variables: the ability of the bank to absorb the liquidity shocks (L1), the ability of the bank to cope with a high liquidity demand in the short term (L2) and the ability of the bank to face risk in the presence of large non-liquid assets (L3), each tested individually, with the dependent variables on the performance of banks: return on assets (ROA) and return on capital (ROE), had a strong and significant link between them resulting in meeting the second objective set in this research. Positive correlation between the bank's ability to absorb liquidity shocks (L1) and the performance of banks confirms that the greater the ability of the banks to absorb liquidity shocks the higher the performance of the banks. Also a positive correlation with high statistical significance was confirmed between the bank's ability to withstand liquidity risk in the short term and the bank's ability to face risks in the presence of large non-liquid assets, with the banks' performance. This confirms that the higher the ability of banks to withstand liquidity risk in the short term and the risk from the presence of large non-liquid assets, the higher the performance of banks.

At the end, we can conclude that commercial banks in Kosovo can raise the level of performance by improving their ability to face risk from liquidity shocks, risk from high demand for short-term liquidity and the risk from the presence of the large non-liquid assets.

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