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Liquidity Risk and Liquidity Management Role

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The aim of this paper is the analysis of liquidity management policy in order to determine the level of liquidity risk. Planning of liquidity requirements is important from the microeconomic aspect, because the banks at any moment must respond to requests submitted by depositors or applications for new loans. Provision of liquidity is also required from the macroeconomic aspect, since this reflects the economic and financial stability. Quantitative data for this study were collected using a questionnaire designed to analyse liquidity risk management, which would help in the identification and explanation of possible changes in the banking system in the country. Based on the analysis, it is estimated that banks properly manage liquidity and maintain adequate liquidity reserves to ensure sufficient funds to meet their commitments on time. Also, the main sources providing liquidity for banks are the non-term deposits and the issuance of various securities. However, holding excess liquidity reserves causes the opportunity cost for banks, but also non-fulfilment of the requirements of the economy for loans. Therefore, the regulatory bodies should reduce the liquidity reserve holding.

Keywords: liquidity management, liquidity risk, banking sector, indicators of liquidity in Kosovo, Basel III, regulation

Introduction

Banks during their operation must adhere to certain principles. The main principles are the principle of liquidity, solvency, the principle of profitability, and the principle of insurance. Liquidity principle is of particular importance, because if a bank is insolvent, it cannot continue to operate as a bank. Liquidity risk was not paid appropriate attention until the appearance of the recent crisis 2007/2008, where the Basel Committee on Banking Supervision (BCBS) created two liquidity standards that are presented as part of the Basel III framework. The liquidity coverage ratio (LCR) requires banks to hold reserves of liquid assets which enable them to cope with the liquidity crisis to a period of 30 day scenario:

LCR = HQLA (part of high quality liquid assets)/total outflows over 30 calendar days

In order to be considered as HQLA assets, the assets should be liquidated in the market during times of stress and ideally be admissible (Baldan, Zen, & Rebonato, 2012). There are two categories of assets that can be included in stock. Assets included in the two categories are those that the bank holds the first day of the period of stress, regardless of their residual maturity. “Level 1” assets may be included without limit, while “level 2” may constitute only 40% of the stock. Also, supervisors may choose to include in level 2 an additional class of assets, these assets should not constitute more than 15% of the total stock of HQLA (BCBS, 2013).

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According to BCBS (2010), in order to promote more medium and long-term funding of the assets and activities of the banking organization, the committee has developed the Net Stable Funds Report (NSFR). This metric establishes a minimum acceptable amount of stable funding based on the liquidity characteristics of an institution assets and activities up to one year:

NSFR = available amount of stable funding/required amount of stable funding

This rate must be greater than 100% (BCBS, 2010).

This study is organized as follows: The first section presents the introduction of the research; the second section presents a review of literature on the management of liquidity risk; the third section presents the data and methodology used in the study; the fourth section presents the results of the analysis; and the fifth section presents the conclusions of the paper.

Literature Review

Baldan et al. (2012) provided a definition of bank liquidity (within liquidity), as its monetary obligations upon demand, in the form of deposits in current accounts and credit lines. This definition of liquidity leads to the liquidity risk of a bank, identified as, banks could have difficulties to immediately fulfil their economic and monetary obligations arising from management of the payments that are made using bank money.

The essence of the strategy of liquidity management obligations lies in the fact that banks can resolve the liquidity problem by engaging additional resources in the financial market and liquidity loans from the Central Bank to cover all the requirements provided for liquidity. This strategy offers the following advantages: The bank may decide to borrow only when it needs funds and it allows the volume and composition of the portfolio assets to remain unchanged. At the same time, management of liabilities has its own control base—interest rate on borrowed funds. However, borrowed liquidity is the most dangerous way to resolve liquidity problems, due to fluctuations in interest rates in the money market and rapid changes in the availability of funds. Bank receives funds and transforms them into various forms of assets. In addition, it transforms short-term (current) deposits into long-term loans, i.e., less liquid assets. The process of transformation means the default risk on bank loans caused by the formation of gaps between short-term deposits and long-term loans. It is interesting that the banking sector in Serbia is not dependent on external sources of funds in 2009, for more than 75% of bank liabilities came from internal sources. Even under such conditions, stable sources of deposits become unstable in a crisis (Kolar, Živkov, & Momčilović, 2011).

A group of researchers have studied liquidity management focusing on the liability side of the balance sheet by examining the accounts of deposits and the amount of open credit lines that the bank has had. These two obligations are the main factors of risk associated with bank liquidity. Non-term deposit accounts provide banks a large base of money, so this is a form of liquidity. Open lines of credit pose a liquidity risk that is out of balance; companies with defined lines of credit can borrow from banks when they need and thus reduce the liquidity of the bank. Banks try to control the liquidity risk exposure by balancing inflows and outflows of assets and some even hold the liquidity reserves for strategic purposes (Vossen & Ness, 2010).

Gatev, Schuermann, and Strahan (2006), in their study, presented a systematic empirical analysis of liquidity risk arising on both sides of the balance sheet of the bank. They studied that the receipt of deposits and loan commitment interact among themselves. They found that the risk of liquidity on the assets and liabilities provides more compensation than reinforcement, which means that the combination of deposits and loan commitments provides protection for bank liquidity risk. Deposit transactions reduce liquidity risk exposure

arising from bank loans. Banks with high levels of deposit transactions do not face high risk, even if they are exposed on the assets without attracting loan commitment.

Dinger (2007) investigated the impact of foreign bank ownership in the bank holding liquid assets and the risk of lack of liquidity in the domestic banking system using data from 10 Central-Eastern Europe (CEE) countries. The author argued that foreign-owned banks have access to diverse sources of liquidity compared to local banks, because they are better able to signal their solvency to interbank lenders located abroad. The author found evidence that foreign-owned banks tend to hold significantly way less liquid assets than domestic banks. In a second step, the author explored the impact of foreign bank penetration on total liquidity risk. A macro-level analysis focused only on liquidity, as an aspect of stability in the banking system was developed, where the author documented a stabilizing effect of the penetration of foreign banks.

In the banking industry, liquidity risk has an adverse effect on profitability. Some studies have supported the positive effect of risk on profitability, while some studies believed in its negative effect (Tabari, Ahmadi, & Emami, 2013). Liquidity risk is usually measured as the liquidity ratio, which is calculated practically in two different forms. In the first type, liquidity is adjusted for the size, which includes the proportion of cash assets in total assets and the proportion of cash assets on deposit (Tabari et al., 2013). The second type includes loans arranged by size, which includes the ratio of the total assets and/or the ratio of net loans to total assets (Tabari et al., 2013).

There are some literatures which summarize the problems in accessing bank practices during the analysis of liquidity. One of the publications defines the process of stress test of the liquidity of Deutsche Bank and describes some of the practices of extensive surveys of the banking sector. Martin argued that in practice, the main challenges are not methodological, but those are the parameters of the model, the design of scenarios, and scenario impact assessments (as sited in Zidulina, 2010, pp. 164-170). Matz offered criticism on current practices and liquidity management and defined three main problems of traditional approaches (as sited in Zidulina, 2010, pp. 164-170): Firstly, traditional approaches based on historical data accounting, which contain only information about the risk may be in the future; secondly, some of the traditional reports are taken into account (based on the constant turmoil of the financial market, this form is not adequate); and finally, traditional reports do not capture the temporary nature of liquidity risk. Matz pointed needs to turn from retrospective approaches and focused on future approaches (as sited in Zidulina, 2010, pp. 164-170). Future access will include provisions defining the group cash flows, the quantification of bank reserves, and the use of key risk indicators, such as those of maturity profiles and concentration profiles. In smaller European countries, such as the Baltic states, the extent of econometric tests and stress tests on liquidity of banks should be extremely limited, as cited in works of Zidulina (2010).

The study of Bordeleau and Graham (2010) presented empirical evidence, regarding the relationship between the holdings of liquid assets and the benefit of a table of Canadian and American banks during the years from 1997 to 2009. According to the authors, the results suggest that a non-linear relationship exists when profitability is improved for banks that hold some liquid assets, however, there is a point beyond which further holding of liquid assets reduces the profitability of banks. Conceptually, this result is consistent with the idea that financial markets reward the bank to some extent for holding liquid assets, thereby reducing liquidity risk, however, this benefit may eventually outweigh the opportunity cost of holding liquid assets on the balance sheet. Preliminary results of this study also suggest that Canadian banks may need to hold less liquid assets during the assessment period than American banks, in order to solve the profit.

Tabari et al. (2013) in their study have examined the effect of liquidity risk in the performance of Iran's 15 banks during years from 2003 to 2010. The factors are divided into two classes, including bank specifications and economic variables. The research model was assessed using collected regression data. According to the authors, the size of the bank, the bank capital, and the gross domestic product will cause increased inflation in the profitability of the bank, while credit risk and liquidity risk will cause decrease in the profitability of the bank. To ensure the strength of the results obtained, the authors have tested the provided model once more by replacing the return on capital, as the bank performance criterion (dependent variable), where almost the same results as the previous model (return on assets) were received. Therefore, regarding the purpose of the research, the results generally show that liquidity risk will cause decrease in the performance of banks. Vossen and Ness (2010), in their research on the management of liquidity of banks, argued that banks tend to provide liquidity in the counter-cyclical manner: more when the economy is doing well and less when the economy takes a turn for the worse. This tends to exacerbate the problem for both the banks and the economy. This has resulted in the creation of regulations and internal policies to try to curb such crises. However, as evidenced by the current crisis, these steps seem to have failed to perform their duty to ensure balance between the two. Banks now have to return to the conservative policy to improve the breach in their systems, including improvement of information systems and accurate models with more realistic assumptions. Also, regulators must find a way to prevent counter-cyclical trends of banks and to ensure that actions carried out by banks, although in order to ensure their liquidity, do not actually make things worse for all stakeholders. The study of Shen, Chen, Kao, and Yeh (2009) investigated the causes of liquidity risk and the relationship between bank liquidity risk and performance for 12 advanced economies over the period from 1994 to 2006. In addition, the model is estimated through fixed-effects regression. The authors found that liquidity risk is endogenous determinant of bank performance. Causes of liquidity risk include the components of liquid assets and dependence on external funding, supervisory and regulatory factors, and macroeconomic factors. Furthermore, it was found that the risk of liquidity may reduce bank profitability (return on average assets and return on average equity). Liquidity risk, according to these results, increases the net interest margins (NIM) of the bank. The authors classified countries as the market-based financial system and bank based financial system. Empirical results showed that bank specific variables have the same effect on bank liquidity risk in both financial systems. Regarding supervision and regulation, it ensures greater official power and high restrictive activities will reduce the liquidity risk in the banking market based financial system. However, they have found that greater strengthening of regulatory monitoring of private banks will increase the bank liquidity risk in the market based financial system. Regarding the macroeconomic environment, the results showed that banks make economic boom in the market based financial system, reducing liquidity easing reserves, but the macroeconomic environment has no effect on bank liquidity risk in the bank based financial system. Liquidity risk is negatively correlated with the performance of the bank in the market based financial system; however, it has no effect on the performance of the bank in the bank based financial system.

Singh (2013), in his research of asset and liability management in India, suggested greater scope for banks to monitor and improve profitability by reducing short-term liquidity.

The fundamental role of banks in the transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk. Practically, every financial transaction of commitment has implications for bank liquidity. Practical importance of liquidity, during the crisis, is highlighted by the theory of financial intermediation that shows the importance of creating liquidity as a main reason for the existence of

banks. Early contributions argue that banks create liquidity by funding relatively non-liquid assets, such as business loans with relatively liquid liabilities (such as deposits of transition). The creation of liquidity makes banks vulnerable and sensitive to flow and such flows can lead to crisis through incentive effects (Madani, Sokoli, & Cakrani, 2009).

Methodology

Quantitative data for this study were collected using a questionnaire designed to analyse liquidity risk management, which would help in the identification and explanation of possible changes in the banking system in the country. Also, their comparison will be important in order to present future trends of improvements.

The questionnaire was addressed to directors and managers of departments of liquidity. The questionnaire was carried out in seven of 10 banks operating in the country. In one bank, researchers have not been able to accomplish the questionnaire, while two other banks were licensed in the past two years and their function is in the early stages. The questionnaire was made by the author based on the different literature, such as works of Gazmend (2008) and Salko and Dhuci (2005) and presented as a test pilot. Period distribution of questionnaires was the fourth quarter of 2013, while completing the survey period for the six banks was the end of 2013 and the completion of the questionnaire by a bank could not be realized until the month of April 2014.

Structured questionnaires were administered. During the design of the questionnaire, a series of quantitative and qualitative issues was taken into consideration. Organized section of the questionnaire summarizes issues relating to the strategy that a bank applies to the protection from a liquidity risk. Data collected from the questionnaire will be processed using the SPSS program.

Questionnaire Results

The data in this section are based on the survey conducted with seven banks in Kosovo. It should be noted that in general banks have responded to all questions included in the questionnaire. Based on this, the indicators discussed in this section may be taken as descriptive of banks active in Kosovo in 2013, when the interviews were conducted.

Liquidity Risk Management

Basic economic role of banks is a mediation process among sectors which have surplus funds and the placement of these funds in sectors that have a lack of funds. Business ability of banks in countries with developed market economy has to do with the transformation of the term structure of sources of funds. Usually, banks make the transformation of the structure of short-term cash resources in long-term credit placements. Due to such transformation, banks could easily face liquidity risk. There are also other ways in which banks may face liquidity risk, as the failure to meet financial obligations by the borrowers, the submission of requests for withdrawal of deposits, and new requests for loans.

Because of risk that banks may encounter, it is necessary for the banks to have liquidity policy, regarding the determination of the volume of requests for withdrawal of deposits and filing of applications for loans and providing alternative sources of funds to cover these requests. Furthermore, the BCBS has specified standards to ensure short-term liquidity for the time period to 30 days and for a longer-term time period up to one year.

In order to ensure liquidity needs, banks use different methods. When asked which methods banks use for liquidity management, four of seven banks pointed out using the following methods (Table 1).

Table 1

Methods Used for Liquidity Management

	Number of banks
Method of return of assets	4
Method of borrowed liquidity	4
Method of combined liquidity	4

Source: Author's questionnaire in 2013.

Out of the seven active banks at the time of the survey, 57% of them (4 out of 7) declared that provided liquidity sources are based on non-term deposits and sale of short-term securities and 43% of banks (3 out of 7) are based on the sale of term deposit certificates (Table 2).

Table 2

Sources of Provided Liquidity

	Number of banks	% of banks
Provision of non-term deposits	4	57%
Sale of term deposit certificates	3	43%
Sale of short-term securities	4	57%

Source: Author's questionnaire in 2013.

In drafting liquidity policy, banks should take into account the various factors that influence the performance of the financial obligations of the bank but also submission of applications for loans. As evident from Figure 1, the most important factors in determining the needs for liquid assets are extraordinary factors, the seasonal, and cyclical ones. Less important is identified to be the secular factor.

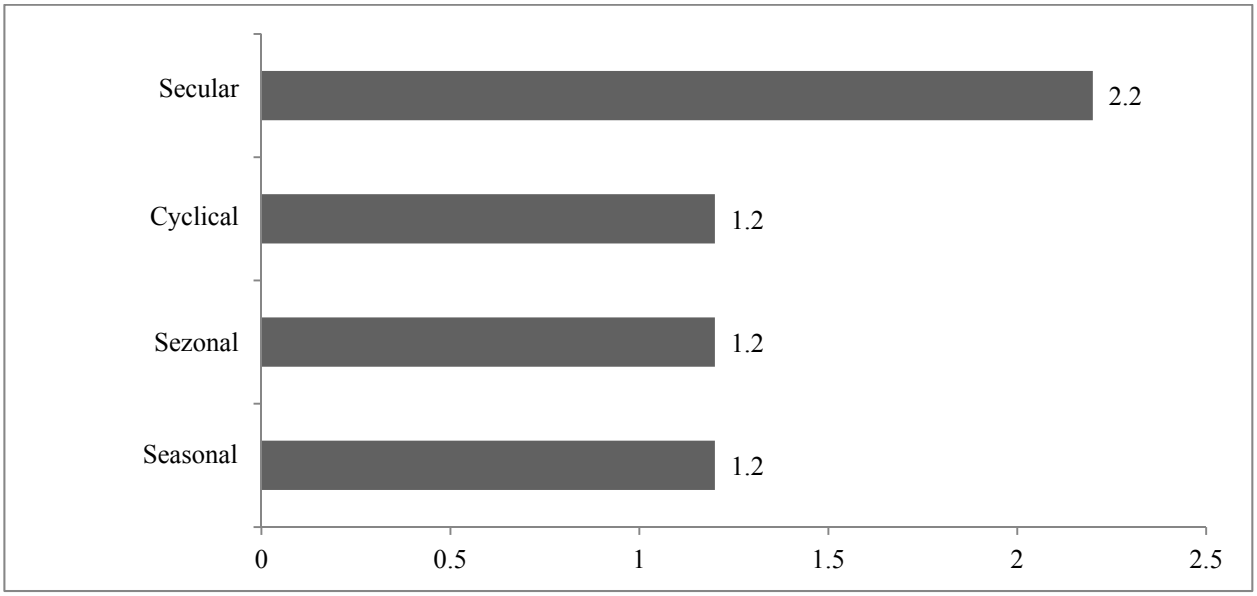

Figure 1. The importance of factors in determining the needs for liquid assets. Source: Author's questionnaire in 2013.
Notes. 1 very important factor; 2 moderately important factor; and 3 less important factor.

Secular factor is not of great importance for banks, since this factor cannot be predicted with complete certainty, because it deals with a longer period of time, while liquidity is for a shorter period of time.

Regarding possible sources of supply to meet the demand for liquidity, the banks have stressed that the most important sources of new deposits are followed by loans from the monetary market. They marked an important factor to be the revenues from non-deposit services, loan repayments from clients, and the sale of bank assets (Figure 2).

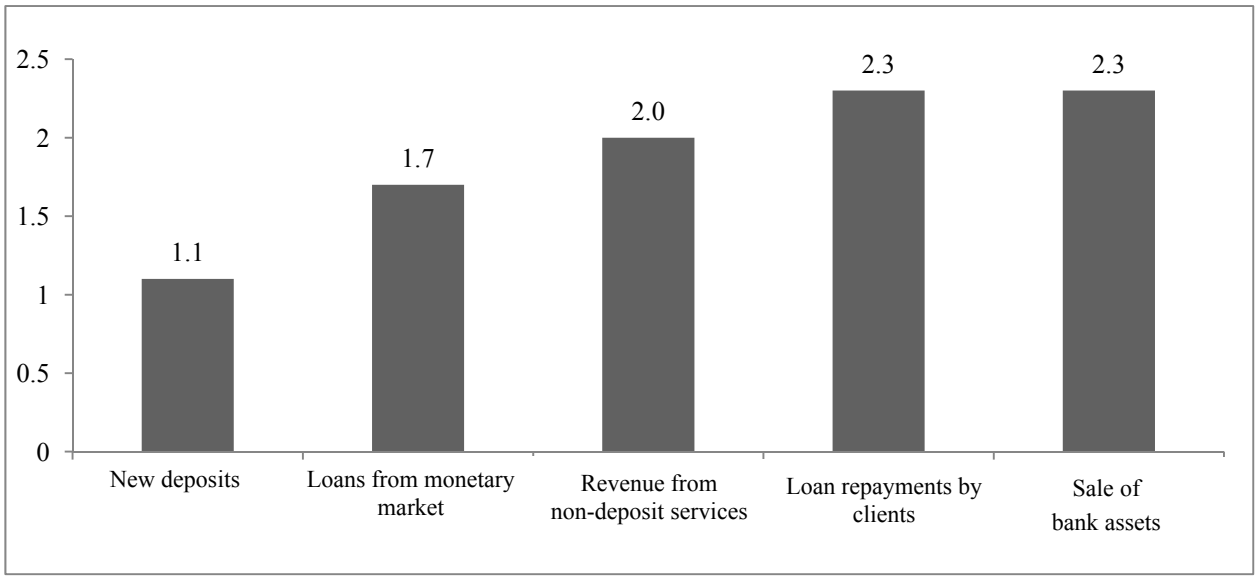

Figure 2. Possible sources of supply to meet the demand for liquidity, the mean. Source: Author's questionnaire in 2013. *Notes.* 1 very important factor; 2 moderately important factor; and 3 less important factor.

The repayment of loans by clients is not an important source of liquidity to banks and this shows that banks do not face the problem of non-performing loans.

As for the most common requirement for the provision of liquidity, the most important factor is to attract deposits and applications received for new loans (Table 3).

Table 3

The Most Common Requirements for the Provision of Liquidity

	Mean
Attraction of deposits	1.1
Applications received for new loans	1.7
Repayment of loans obtained from banks	2.2
Other operating expenses	2.8
Payment of cash dividends	2.4

Source: Author's questionnaire in 2013.

When planning liquidity needs, banks use different methods. According to survey results, all banks use liquidity indicator method for assessing the liquidity needs, while four banks use the method of sources and use of funds and four banks use fund structure approach.

Regarding greater volatility of withdrawal by depositors, results are as follows: Major accounts in sight deposits the rate ranges from 7% to 60%; in large accounts of term deposits from 25% to 80%; and in large

accounts of savings deposits from 5% to 70%. These data show that there are major differences from one to another bank in terms of deposit withdrawals.

Loan/deposit ratio at the end of 2013 came down to 73.7%. This decrease is attributed to a higher rate of growth of deposits compared to loans. Low level of this ratio suggests satisfactory liquidity position and enough space for lending growth without threatening the liquidity position. The ratio of comprehensive liquid assets to short-term liabilities marked an increase to 48.0% from 39.3% in December 2012. With the respective regulations of the Central Bank of Kosovo, banks must maintain the ratio of liquid assets to short-term liabilities at a minimum of 25%. Required reserves of the banking sector also remain at quite higher level (180.3 million euro) than the minimum regulatory requirements of 209.6 million euros, which can serve as additional signal of good liquidity situation that the banking sector has (Central Bank of Kosovo, 2013). However, if the supply is greater than demand for liquid assets, the banks have surplus liquid assets; this shows that banks have untapped potential for loans. But if the banks have cash deficit, then banks should provide liquidity planning through liquidity reserves, issuance of securities, and taking out loans. In order for the mobilization and concentration of deposits to be of greater mass (volume), it is also important that the interest rate is for up to one year maturing term-deposits. The data presented in Table 4 show that the average interest rate on deposits for 12 months ranges from 3.8% on the amount of 5,000 euros to 4.2% on the amount of 1,000 euros).

Table 4

Average Monthly Interest on 12 Month Deposits

Deposits	Interest Rate
1,000 euro	4.2%
5,000 euro	3.8%
50,000 euro	4.2%
100,000 euro	4.0%

Source: Author's questionnaire in 2013.

The increase of the volume of deposits has also been affected by the adoption of the Law on Deposit Insurance. But, from 2014, there is a decline in deposit interest rates. The total deposit funds in 2014 amount to 2.42 million euros which represent an increase of 10% compared with the previous year, while the entire loans placed amounted to 1.89 million euros (Financial Stability Report, 2014). According to the author, the reason why banks have reduced the interest rate on deposits is that banks have untapped depository potential and this causes cost for banks.

Conclusions

Based on the analysis, banks use different methods of providing liquidity. As in Kosovo, the financial market is not developed and 92.5% of the banking capital is foreign-owned banks which have no difficulty in providing liquidity through the issuance of letters of various securities in developed financial markets and getting credit correspondent banks.

Based on the analysis, it is estimated that banks properly manage liquidity and maintain adequate liquidity reserves to ensure sufficient funds to meet their commitments on time. Also, the main sources providing liquidity for banks are the non-term deposits and the issuance of various securities.

However, the findings indicate that banks are less likely to use the certificate of deposit to provide the necessary liquidity and this shows that banks have the lowest volume of term deposits.

Also, less important source, the sale of bank assets shows that banks have primary reserves of sufficient liquidity and sufficient free passage of non-term deposit funds. These survey results show that commercial banks face no liquidity risk.

The domestic deposits are the main source of providing funds for banks. Banking potential sources of supply to meet the demands for liquidity are new deposits. Since the volume of deposits to be higher banks should increase interest rates on deposits.

Regarding the most frequent demands for the provision of liquidity to banks which represent the most important factors are the withdrawal of deposits and demand for new loans; banks in addition to the indicators traditional liquidity may also use different measures of quantitative and qualitative liquidity risk, proposed by the BCBS.

However, holding excess liquidity reserves causes not only the opportunity cost for banks, but also non-fulfilment of the requirements of the economy for loans. Therefore, the regulatory bodies should reduce the liquidity reserve holding. Due to proper management of liquidity, banks are not faced with liquidity problems. Furthermore, the provision of liquidity by banks does not affect the decline of profitability of banks.

A research conducted by Aliu (2011) has documented that despite small reduction of liquidity in banks in Kosovo, in general, the level of liquidity is sufficient and in accordance with the regulations of the CBK.

In terms of liquidity management, it is recommended for future research studies to expand not only in Kosovo, but also in the CEE countries in general, because there is no such research. Furthermore, banks must also focus on the use of advanced stress tests to determine the liquidity needs for a longer period of time.

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