

THE ANALYSIS OF THE LIQUIDITY INDEX AT THE LEVEL OF THE FIRST THREE ROMANIAN COMMERCIAL BANKS

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Abstract

The issue of the liquidity risk is widely debated, both at international level and at the Romanian banking system level, especially with the onset of the financial crisis of 2007-2008, after which it was highlighted a lack of consistent monitoring of this risk. The purpose of the analysis that I performed in this article is to highlight how the Romanian commercial banks managed their liquidity risk until the implementation of the newest international banking regulations, respectively the Basel Agreement III, using the liquidity index. The approach is part of a broader research that I carry out, which aims to highlight how the Romanian commercial banks adapt to the international regulations. Starting from the financial situations of the first three banks in the Romanian system (BCR, Transilvania Bank, BRD), I decided to analyze the method of management of the liquidity risk of the liquidity index, both individually and in comparison, in order to highlight their exposure to liquidity risk.

Keywords: liquidity risk, liquidity index, maturity bands

JEL Classification: G21, F33, F65

1. Introduction

One of the risks with significant importance in the banking activity is the liquidity risk, the risk which was not very exactly regulated until the onset of the financial crisis of 2007-2008, but which, through its manifestation, was one of the causes that started the crisis. In this work I analyzed the methods used in measuring the liquidity risk using the liquidity index. The analysis is structured as follows: a presentation of the concept of liquidity risk, a presentation of the calculation method of the liquidity index, and finally the calculation of the liquidity index in evolution, based on official financial data, at the level of the first three banks in the system in terms of the value of their held assets, respectively BCR, Transilvania Bank and BRD. The analysis allowed me to emphasize both the exposure to the liquidity risk in evolution for each bank individually and also in comparison for the three banks.

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2. Measuring the liquidity risk using the liquidity index at the level of the first three commercial banks in Romania

The risk of lack of liquidity is manifested from the mismatch of the maturities between the asset and the liability. In practice, the phenomenon of extending the maturities to assets and reducing those to liabilities is manifested. If the loans and interests are not paid according to the plan, the bank is facing short-term liquidity needs that have to be financed. The effects are also similar when customers withdraw large sums from the bank deposits. [Dardac, Moinescu, (2007)]

Liquidity risk has several meanings:

- the possibility that a bank's earnings and capital to be affected, because of the inability to meet its obligations on time without facing unacceptable losses;
- the bank's inability to finance the asset portfolio on maturities corresponding to interest rates and the bank's inability to liquidate the position at the right time and at a reasonable price;
- mismatching the maturities between revenue and payment flows;
- the potential loss of income and / or capital as a result of failing to respect the obligations assumed and arise from insufficient reserves compared with the need for funds.

The indicators aimed at exposing the liquidity risk are: index of liquidity, liquidity ratio, the average transformation of maturities, the coverage ratio of the breaches and the coefficient of their own funds and permanent resources.

In order to illustrate the situation of the banks chosen in the study reported to the exposure to the credit risk, using the public data from financial reports, from these indicators I will analyze the liquidity index.

Liquidity Index is calculated as the ratio between weighted liabilities and weighted assets. [Dardac, Moinescu, (2007)] Weighting is done either using an average number of days, corresponding to each maturity band, or using the current number of the respective maturity.

$$I_L = \frac{\sum P_i * a_i}{\sum A_i * b_i} \times 100 \quad [1]$$

where:

I_L – liquidity index

P_i – liabilities with maturity i

A_i – assets with maturity i

a_i – the weighting coefficient of the liabilities with maturity i

b_i – the weighting coefficient of the assets with maturity i

The liquidity index may take subunit or above unit values, the interpretation method of it being as follows:

- a liquidity indicator equal to 1 (a very rare situation actually) or that tends to 1 (the optimum situation) indicates a corresponding correlation of the bank

assets and liabilities in terms of maturities and shows a liquidity risk almost nonexistent;

- a liquidity indicator below unit indicates a situation where the bank transforms the short-term liabilities into long-term assets, a situation which exposes the bank to liquidity risk, but that may generate an additional income, particularly when the long term interest rates are bigger than the short-term ones;
- a liquidity indicator greater than one reflects the situation in which the bank turns the long-term liabilities attracted into short-term assets, this is a situation that does not generate liquidity risk but produces the disadvantage of diminishing the interest margin, when the long-term rates are higher than the short-term ones, advantage only existing when the order relationship between the interest rates on deadlines is reversed.

In analyzing the liquidity risk exposure I will determine the liquidity index for 3 of the analyzed banks (BCR, BRD and Transilvania Bank). For BRD and Transilvania Bank, the public data from the financial statements, allow determining the liquidity index in the 3 years preceding the implementation of Basel III (2012.2013 and 2014), but for BCR, the situation of the assets and liabilities based on maturity ladders is presented only for the years 2012 and 2013 and for 2014, the bank communicates only the report for total liabilities reported to total assets, so that for 2014 is not possible to determine the liquidity index. Through this analysis I want to emphasize the correlation degree of the banking assets and liabilities in terms of maturities.

2.1. The analysis of the management method of the liquidity risk at BCR using the liquidity index

According to the information sent through the accounting policies – the risk management in the Financial Statements of 2012 and 2013, BCR examines the exposure method to the liquidity risk through:

- the analysis of the assets structure in terms of their liquidity;
- the analysis of debt volatility;
- the analysis of major currencies liquidity;
- correlating the structure and maturities of investments and resources;
- monitoring liquidity indicators according to maturity, based on future cash flows.

BCR elaborates, for the purposes of managing liquidity risk, a strategy for managing liquidity in normal conditions and a strategy for managing liquidity under stress, respectively in crisis conditions.

Regarding the index of liquidity, determined using the percentage of the current number of the maturity band (I chose this way of weighting, rather than the one using the average number of days from the maturity band, in order to ensure comparability, as some banks use 5 maturity bands and others 6), the situation in 2012 and 2013 is presented in tables 1 and 2.

Table no.1 – The liquidity index in case of BCR in 2012

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 3 days	10,07	12,23	1	10,07	12,23
< 3 months	22,12	5,15	2	44,24	10,3
3-12 months	10,49	8,59	3	31,47	25,77
1-5 years	13,53	17,24	4	54,12	68,96
> 5 years	7,17	27,33	5	35,85	136,65
Total				175,75	253,91

Table no.2 – The liquidity index in case of BCR in 2013

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 3 days	13,2	11,31	1	13,2	11,31
< 3 months	19,05	2,85	2	38,1	5,7
3-12 months	8,02	5,86	3	24,06	17,58
1-5 years	12,08	18,29	4	48,32	73,16
> 5 years	3,66	25,19	5	18,3	125,95
Total				141,98	233,7

Source: my own processing after BCR - Consolidated and individual financial statements, 31 December 2013, pg. 83,86,87.

$$I_{L2012} = \frac{175.75}{253.91} \times 100 = 69,21\% \quad [2]$$

$$I_{L2013} = \frac{141.98}{233.7} \times 100 = 60,75\% \quad [3]$$

Analyzing the liquidity clues in the 2 years and of course structuring the balance sheet items on maturity ladders, it is highlighted an exposure of BCR to the liquidity risk, the liquidity index being below one, the exposure recording an increase in 2013 compared to 2012. Exposure to liquidity risk is mainly generated due to the significant difference between the liability items with maturity over 5 years and the placed assets on this maturity. The largest share in the assets with a maturity of more than 5 years is held by loans, typically granted on long term (especially the investment loans) that are not supported by resources attracted on long term.

2.2 The analysis of the management method of the liquidity risk at BRD using the liquidity index

BRD considers the liquidity risk to be associated with the difficulties to obtain the necessary funds in order to meet its commitments, or with the inability to achieve a financial asset in a timely manner and a value close to the fair value. BRD constantly monitors the current liquidity gaps between the bank's assets and liabilities and makes predictions about the following situations that it may go through, ordinary situations or stress scenarios.

The assets and liabilities necessary for determining the liquidity index are presented in table no. 3, 4 and 5.

Table no. 3 – The liquidity index in the case of BRD in 2012

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 1 month	27,07	11,81	1	27,07	11,81
1-3 months	5,99	2,65	2	11,98	5,3
3-12 months	6,22	8,7	3	18,66	26,1
1-5 years	2,52	14,27	4	10,08	57,08
> 5 years	0,63	9,11	5	3,15	45,55
Total				70,94	145,84

Table no. 4 – The liquidity index in the case of BRD in 2013

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 1 month	26,14	12,54	1	26,14	12,54
1-3 months	5,71	2,08	2	11,42	4,16
3-12 months	6,48	8,99	3	19,44	26,97
1-5 years	3,42	10,58	4	13,68	42,32
> 5 years	0,15	11,62	5	0,75	58,1
Total				71,43	144,09

Table no. 5 – The liquidity index in the case of BRD in 2014

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 1 month	25,24	10,77	1	25,24	10,77
1-3 months	4,79	1,46	2	9,58	2,92
3-12 months	7,06	6,70	3	21,18	20,1
1-5 years	2,44	13,83	4	9,76	55,32
> 5 years	0,14	11,24	5	0,7	56,2
Total				66,46	145,31

Source: my own processing after BRD - Consolidated financial statements for the end of the year at 31 December 2013, page 74, 76, 77 and consolidated financial statements for the end of the year at 31 December 2014, page 77.

$$I_{L2012} = \frac{70.94}{145.84} \times 100 = 48,64\% \quad [4]$$

$$I_{L2013} = \frac{71.43}{144.09} \times 100 = 49,57\% \quad [5]$$

$$I_{L2014} = \frac{66.46}{145.31} \times 100 = 45,73\% \quad [6]$$

In the case of BRD the exposure to liquidity risk is higher, given mainly the existence of the resources attracted on longer term, at a lower level than in the case of the leader of the Romanian banking market. The situation of the liquidity index records a slight degradation in 2014, compared to the years 2013 and 2012. Analyzing the situation of the maturity ladders assets it can be seen an increase of those with average maturity (1-5 years), equally unsupported by increasing the funds raised in this term.

2.3. The analysis of the management method of the liquidity risk at Transilvania Bank using the liquidity index

According to the accounting notes from the individual financial statements of Transilvania Bank, liquidity risk is defined as being generated by the bank's inability to meet its outstanding liabilities at their maturity. Bank officials say that there is access to diversified funding sources; funds are raised using a range of instruments such as deposits of clients or of partner banks, loans from development institutions and financial institutions, and also social capital. The bank attempts to maintain a balance between the continuity and flexibility of obtaining funds through contracting debts with various maturities and in different currencies and also continuously controls the liquidity risk by identifying and monitoring the changes in funding and by diversifying the funding base. The Bank has in its organization a committee for the administration of assets and liabilities which is responsible for the regular analysis of the liquidity indicators and for establishing corrective measures to the balance sheet items, in order to ensure a prudent management of liquidity.

The situation of the assets and liabilities of Transilvania Bank, based on maturity ladders, necessary to determine the liquidity index is presented in Tables 6, 7 and 8.

Table no. 6 – The liquidity index in the case of Transilvania Bank in 2012

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 3 months	17,73	16,85	1	17,73	16,85
3-6 months	3,55	2,76	2	7,1	5,52
6-12 months	1,98	5,91	3	5,94	17,73
1-3 years	1,82	3,84	4	7,28	15,36
3-5 years	1,51	2,29	5	7,55	11,45
> 5 years	0,14	5,62	6	0,84	33,72
Total				46,44	100,63

Table no. 7 – The liquidity index in the case of Transilvania Bank in 2013

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 3 months	19,95	18,29	1	19,95	18,29
3-6 months	3,77	2,58	2	7,54	5,16
6-12 months	1,91	6,41	3	5,73	19,23
1-3 years	1,12	4,52	4	4,48	18,08
3-5 years	1,76	2,84	5	8,8	14,2
> 5 years	0,4	6,29	6	2,4	37,74
Total				48,9	112,7

Table no. 8 – The liquidity index in the case of Transilvania Bank in 2014

Maturity	Personal debts and equities (billion lei) (P_i)	Assets (billion lei) (A_i)	Share (a_i, b_i)	Weighted liabilities ($P_i * a_i$)	Weighted assets ($A_i * b_i$)
< 3 months	21,04	20,09	1	21,04	20,09
3-6 months	4,2	2,46	2	8,4	4,92
6-12 months	2,72	4,12	3	8,16	12,36
1-3 years	1,4	5,86	4	5,6	23,44
3-5 years	1,89	3,95	5	9,45	19,75
> 5 years	0,57	7,4	6	3,42	44,4
Total				56,07	124,96

Source: my own processing after Transilvania Bank – Individual financial statements at 31 December 2013, page 74, 75, 76 and Individual financial statements at 31 December 2014, page 34

$$I_{L2012} = \frac{46.44}{100.63} \times 100 = 46,14\% \quad [7]$$

$$I_{L2013} = \frac{48.9}{112.7} \times 100 = 43,38\% \quad [8]$$

$$I_{L2014} = \frac{56.07}{124.96} \times 100 = 44,87\% \quad [9]$$

Analyzing the situation of the liquidity index for the Transilvania Commercial Bank, we still notice a below unit level, which reflects a long-term financing of the assets from liabilities attracted over short terms, respectively a certain exposure to liquidity risk. The situation is caused by the type of banking activity carried out, respectively attracting short-term resources and placing them in long-term assets or investment loans, real estate loans / mortgage loans. The situation of distribution of assets and liabilities on maturity ladders has worsened slightly in 2013 compared to 2012, aspect which can also be explained by the increase in the exposure for longer terms than 5 years, but also the exposure on medium term, between 1-3 years. The situation of the index improves in 2014, but still remains below the level recorded in 2012.

Comparatively analyzing the situation of the 3 banks analyzed from the perspective of exposure to liquidity risk, we notice a relatively similar situation with liquidity indices below unit, which reflect a long-term asset financing from liabilities attracted on short-term. So I appreciate that there is a medium degree of liquidity risk. This aspect can be explained both through the typology of the three banks, namely universal banks, focused both on attracting deposits and also on granting loans. Another explanation of this practice is represented by the momentum that the long-term investment loans (mortgage / real estate loans) have had on the base of the economic development and accession to the European Union before the end of 2008. In addition to these aspects, it is worth mentioning the method of saving in Romania, which is generally a short-term saving, which affects the liquidity index. Thus, approximately 50% of the total deposits attracted by the commercial banks in Romania come from residents and are short term (NBR, RSF - 2013 pg. 38), while about half of the loans granted are long-term (NBR, RSF 2014, pg 42). These issues generate challenges for each bank in terms of liquidity risk management and the careful management of assets and liabilities elements.

But when discussing about the liquidity risk, an analysis of the liquidity index is not enough. BNR asks the banks, according to Regulation 25/2011, to report a liquidity indicator, calculated as a ratio between the effective liquidity and the necessary liquidity. In determining the effective liquidity and the necessary liquidity different coefficients of adjustment are applied, that relate both to the ability of assets to be converted into liquidities, but also to the risk of early repayment of liability elements. Reporting this indicator will only be made at the level of the banking system by the BNR, or only at the level of some banks, which is why I only limited myself to evolutionary analyzing the liquidity index.

3. Conclusions

The liquidity risk is one of the risks to which any bank is subjected, being one of the most difficult risks to commensurate, on the one hand due to the operation protocol of

banks in general (attracting short-term deposits and granting long-term loans) but also because of the unpredictable possibility of withdrawal of deposits by the depositors.

In this article I performed an analysis of one of the management indicators of the credit risk, namely the liquidity index. Considering the situation of the liquidity index, at the level of the 3 banks, in comparison, I can state that BCR presents the highest liquidity index, which we can amply state that tends towards 1 (although there is a great difference up to this level, it is still the only bank which has the level over 0.5). This can be justified because BCR is the largest Romanian bank in terms of assets and market share, having confidence from the public consumer of banking products, a trust that enables it to attract resources more easily with longer deadlines. But I consider that all 3 banks must carry out a permanent monitoring of the assets and liabilities on maturity bands and especially to carry out stress scenarios, which may reflect vulnerabilities in the case of the onset of other financial crises. The financial crisis of 2007-2008 revealed that liquidity risk should be as well regulated and monitored as the credit risk, both nationally and internationally, an aspect which I will detail in future research.

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