LIQUIDITY - A CHANGING CONCEPT, WITHIN THE POST CRISIS ENVIRONMENT

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Abstract

The paper aims to reflect the deep correlations between liquidity and lending mechanisms, within the banking system, both at macro and micro/individual bank's level, related to the post crisis economical context. Liquidity represents a very important indicator within the management of the banks, not easy to understand, monitor and use.

The paper provides a unique mix of financial analysis on the top five Romanian bank's indicators, integrated within a strategic analysis of the context, regulatory framework and evolutions impacting on liquidity and lending mechanisms. The introduction includes our motivation for drafting this research paper. The second part of the paper presents the rich and latest body of literature, focusing on the evolving role of the liquidity concept and the changing relationship with other relevant indicators, within the post crisis environment. The third part presents the methodology, database, the financial analysis for relevant indicators of the top 5 Romanian banks, but also the correlations and results of our research. The forth part reflects discussions and conceptual approaches on liquidity, in order to integrate our analysis within the context, due to deep and strategic changes. The last part represents our concluding remarks.

Keywords: liquidity, regulations, capital adequacy, lending mechanism, banking system, liquidity risk management.

JEL Classification: A11, D53, D81, E22, E51, E58, E66, F15, F42, F61, F62, G01, G02, G21, G23, G28, G38.

1. Introduction

Within the global post crisis context, both from scientifically and empirical approaches, there are significant challenges for the economical and banking systems to find a brake through formula that will efficiently corroborate liquidity

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with lending mechanisms, in a “one-size fits all” pattern. Many more steps should be done in order to deepen the theoretical understanding of liquidity, considering also the effects, the monitoring process and related risks.

Our motivation to elaborate this paper resides in the complexity and relevance of the topic, both on the financial/banking markets and real economy. Academia, regulators, bankers, understand and may explain the concept of liquidity, in different ways. Due to the deep changes in the financial systems, due to the globalization process and cross-border activities, due to the central banks activity and operations, due to the innovations within the banking systems and the competition from the non-banking financial institutions, the liquidity concept may be used in a variety of ways, understood and reflected upon different criteria.

Our research paper analyses and reflects the correlation between the macro-economic and micro-economic business banking environment, using financial analysis instruments. Liquidity, considering the global/systemic level and the individual bank’s level represents a key indicator, in a complex interconnection with other relevant aggregate financial indicators.

The complexity of the financial and banking systems, the dynamics of factors that may influence its functionality, the geopolitical evolutions and the changing role of the strategic actors and providers of liquidity offered challenges in drafting and presenting a paper on liquidity.

The research paper, in order to be able to reveal the holistic approach on liquidity but also its strategic instrumental role for bank’s management, will consider, one-by- one, all the relevant aspects related to liquidity, integrated with the latest banking developments, lending systems, associated risks, change in regulations, new European mechanisms and new regulations imbedded by the central banks.

The competitive advantage, the differentiation of our paper is reflected by the integrated perspective on liquidity, both on global/systemic level and bank’s individual level, via providing of an in depth financial analysis for the main banking indicators and specific correlations, together with the conceptual analysis of the complex subject of liquidity. The importance of our study emphasizes the complex interconnection between macro level and micro level in the economic reality, this being a key element of the financial crisis.

2. Literature review

In order to base our research paper, relevant publications (books, articles, papers, studies) related to liquidity, liquidity risk, other relevant indicators for banks and banking systems have been analyzed.

In order to monitor global liquidity, it is relevant to identify and understand the exposures of the banks and non-financial institutions and to analyze their consolidated balance sheets, including the activity in different countries and jurisdictions, different branches and subsidiaries, different borrowers, different currencies.

Some studies and authors focused mostly on the concept of liquidity (Caruana., J., June, 2013, March 2014), on the macroeconomic role of the liquidity (Amza., A., Gauduchevici., G., October 2015), but also on the correlations with the capital of the banks and other indicators relevant for the banking supervision (Bouwman., Christa H.S., October 2013).The concept allows debates on global liquidity, individual bank's liquidity, liquidity indicators, "official" global liquidity, "private" global3 liquidity, central bank liquidity, market liquidity, funding liquidity.

Global liquidity was defined as "ease of financing" (Caruana, 2013), liquidity being also related with the perceptions of the market participants towards risk, valuations cash flows that drive credit extension and liquidity, with impact on the financial stability as well as on real economy. Its complexity, both theoretical and empirical, being provided by the various indicators/variables needed to be monitored and integrated, at the international financial system level.

Regulatory and supervisory frame of the banking systems emphasizes the liquidity requirements, (Douglas J. Elliot, June 2014), pointing the compliance aspects, risk management requirements, supervisory frame with a need to harmonise and integrate relevant indicators for banking activity.

Previous literature includes relevant analysis on liquidity risk and correlations with the credit, within the crisis environment (Strahan., Philip E., May 2012) but also the different dimensions of the bank liquidity risk (e.g. Soula., Jean-Loup., December 2015), in order to reflect the lessons of the crisis.

The concept of liquidity, the factors that are influencing liquidity and liquidity risk are receiving extended attention, reflected in the research publications and reports of the international financial and banking institutions, central banks.

A key point4 on global liquidity reflects a combination of both the availability of funds at a national level, as well as the extent of international financial integration. It was assessed that global liquidity (International Monetary Fund Policy Paper, 2013) was understood via pooled monetary aggregate, focusing on the multiplier connecting narrow money (cash and other claims on the central bank) with broad money (deposit liabilities of the banking sector). The dynamics of the financial system, the financial innovation, including securitization, changed the classical approach on liquidity.

European Central Bank defines central bank liquidity as the ability of the central bank to supply the liquidity needed to the financial system (it is typically

[1] Committee on the Global Financial System (CGFS, 2011) considers global liquidity as the sum of two parts: 1) official liquidity, which is created by central banks though both conventional and unconventional policies; and 2) private liquidity, which is generated instead by financial institutions through credit creation, as presented in IMF Policy Paper, "Global Liquidity – credit and funding indicators", July 16, 2013.

[2] As presented in IMF Policy Paper, "Global Liquidity – credit and funding indicators", July 16, 2013.

measured as the liquidity supplied to the economy by the central bank).5 Technically, what the central bank does, is to develop a pattern in form of a regulatory frame, which determines the monetary policy. In order to implement this strategy, the central bank uses its monetary policy instruments (open market operations) to create liquidity in the money markets, promoting the adequacy of the target rate and the interbank rate to be closely aligned.

The following table explains the traditional approach towards liquidity:

Liquidity type	Role
Central bank liquidity	Provision of amount of liquidity that balances demand and supply
Market liquidity	(Re)distribution and recycling of liquidity
Funding liquidity	Efficient allocation of liquidity resources

Figure 1: The role of liquidity

Source: The European Central Bank (Feb. 2009; Working Paper No.1008)

The understanding, integration and monitoring of all three types of liquidity and the introduction of prudential and supervisory regulations may provide good requirements of capital and adequate levels of liquidity that will allow banks to better managing associated risks of the foreign financing fluctuations.

Other relevant studies on liquidity describe the important correlation between liquidity and capital of the banks. According to the Federal Reserve System (Board of Governors), capital and liquidity are distinct but related concepts, reflecting bank's solvency and viability. The regular assessment of capital adequacy and liquidity according to the Annual Report (2015) issued by the National bank of Romania, states that based on the results of the assessment of risks to capital, additional own fund requirements will be determined by the supervisory authority (covering risks and unexpected losses not covered by provisions).

In this regard, besides the own capital funds requirements that will be set-up, Internal Capital Requirements (determined in the ICCAP process) are taken as a viable option. Moreover, the Total Supervisory Capital Requirements (TSCR) will be determined by the regulatory authorities in order to ensure the comfort that the sum of own funds will cover risks that banks are exposed to.

[3] ECB:"Working Paper No. 1008/Feb.2009; Liquidity (Risk) Concepts Definitions and Interactions".

From the TSCR, the overall requirements (OCR) are determined as an added buffer requirement provided by the CRD IV Package (implemented in Romania via the EU Directive no. 36/2013 and the EU Regulation no. 575/2013, transposed within the NBR Regulation no. 5/2013).

The importance of the correlation between the two indicators is based on understanding that liquidity measures the ability to convert assets to cash and the capital may act as a final aid to absorb unexpected losses.

The capital of a bank, in accordance with definitions of the Bank of England, represents its own funds. "It includes common shares (also known as common equity) and retained earnings. A bank's own funds are items such as its ordinary share capital and retained earnings — in other words, not money lent to the bank that has to be repaid. Taken together, these own funds are equivalent to the difference between the value of total assets and liabilities. As outlined in the previous section, a bank's capital base and its holdings of liquid assets are both important in helping a bank to withstand certain types of shocks."[6]

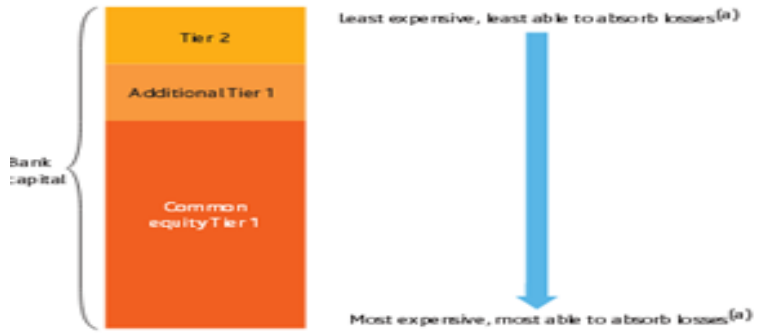

Figure 2: What matters as capital in the banking system?

Source: The Bank of England: "Bank capital and liquidity"; Quarterly Bulletin, 2013; page 209.

As reflected in the graph below, equity capital or Tier 1 capital represents the most important support for capital in banking. In this respect, Tier 1 capital, as defined by the Bank of International Settlements guidelines, includes loss-absorbing capital that is common stock, disclosed reserves, retained earnings (excluding current year results) and minority interests in the equity of subsidiaries that are less than wholly owned. It excludes cumulative preferred shares, hidden reserves and re-evaluations reserves, subordinated debt and long-term debt; these are defined as Tier 2 capital.

[4] The Bank of England: "Bank capital and liquidity"; Quarterly Bulletin; By Marc Farag of the Bank's Financial Stability Directorate, Damian Harland formerly of the PRA's Banking Policy Department and Dan Nixon of the Bank's Media and Publications Division; 2013.

Other studies emphasize the various factors influencing the evolutions of liquidity risks, the major difference between liquidity risks and level adequacy, both in the past and present times, (e.g. European Banking barometer 2016 – Seeking stability in an uncertain world; Ernst and Young, Survey 2016). Liquidity is also related with expectations and attitudes, as reflected by regulators and authorities (e.g. Single Resolution Board 2016, Brussels, "SRM – Introduction to resolution planning").

Referring to the lending mechanism and the correlation to liquidity and capital, money, in a modern economy, is mainly created by the central bank and commercial banks. The liquidity regarding the banking system is the scriptural currency owned by the credit institutions in the opened accounts at the central bank and liquidity from the economy, meaning cash and account currency, owned by the non-banking sector. The connections between the two types mentioned is that the commercial banks create currency throughout lending mechanisms (thus the expansion of deposits in the banking sector), having the thrust of the public in the commercial banks, by the capacity of transforming the liabilities into currency. Because of the mechanisms presented, the sum of the cash and deposits set up by the non-banking public sector represents the monetary mass[7].

In correlation with the traditional, classical understanding of liquidity, the concept is often related to ensuring confidence of depositors.

Some studies (e.g. David., D., 2013), (e.g. National Bank of Romania, Annual Report 2015, Financial Stability Report 2016) reflect the trends in the evolution of the banking sector in Romania, the approach on liquidity, capital of the banks and correlation with other banking indicators.

3. Methodology, database and financial analysis:

Romanian top 5 banks analysis and implications of the lending mechanism (for individuals and corporate) on liquidity

3.1 Methodology and database used in the analysis

Regarding the research methodology, in order to insure reliability and support for the case study, we have collected and selected data from the annual financial reports of the top five banks/financial groups in the Romanian system. Other support data included in our analysis involves: macroeconomic data and indicators from relevant statics, exchange rates for different currencies, capital requirements from the analysis of the regulatory frame, minimum reserves, Non Performing Loans (NPLs) statistics provided by the analyzed banks and by the National Bank of Romania reports. Other relevant data for the financial analysis, related with the Romanian banking system's indicators and with the European

[5] National Bank of Romania, "The Banking system liquidity" presentation of Dorina Antohi, Bucharest (May 2010).

banking system indicators was collected from the Annual reports and from the Financial Stability Reports of the National Bank of Romania, from the reports provided by the European Central Bank. Descriptive statistics were used in order to reflect the benchmarks, the best practice approaches and elaborate on the results and conclusions.

Thus, indicators with relevant information for the study have been identified and explained and a research method has been applied; in this respect the most important data analysis and the interpretation of the results in accordance with the proposed methodology, are to be presented below.

For the purpose of the analysis, we have considered the credit risk ratio and the market risks (that include Risk of interest rate and Currency risk).The most important market risk, in accordance with the studies, it is considered the liquidity risk.

We have analysed relevant indicators that are used in evaluating, assessing, monitoring and managing the liquidity risk:

- *The General (global) Liquidity*: => **GLR = Liquid assets/Current liabilities**

- *Quick ratio liquidity (or treasury liquidity)*: => **QLR = cash + cash equiv. clients/current liabilities**

- *Total deposits Liquidity*: => **LR/Deposits = Total Assets/deposits**
- *Total deposits and loans Liquidity*
- *Loan to deposits ratio (LTD)*
- *The liquidity position* (the equilibrium between liquid assets and quick or current liabilities)
- *Liquidity indicator* = >**effective liquidity/necessary liquidity** => this determines the liquidity rate or ratios which is usually used as new loans/loan with maturity in the same period;
- *The tier 1 capital and permanent resources* => **long term resources/utilizations over long term periods;**

Liquidity risk profile of the banks was part of the risk appetite and in this respect a number of tools, implemented by regulatory authorities are used for quantification as well (as proposed Basel III regulatory framework related):

- Survival period Analysis (SPA)
- Liquidity Cover Ratio (LCR)

One of the conceptual approaches on liquidity reveals that the banks liquidity is actually the monetary position, as an expression of liquidity itself, but in accordance with the referral rates, the liquidity-banking concept is a very complex one. In this respect, the management of liquidity and the management of liquidity risk are of highly importance for banking business. Both from a theoretical/research and empirical perspective, the liaison between liquidity and

profitability represents a top strategic issue. From a banking management perspective, the topic of the profitability hypothesis of banking institutions can be analysed with some of the following indicators:

- Return on Equity (ROE) and Return on Assets (ROA)
- Equity multiplier or the Capital multiplier
- Profit margin rate: -> (net Profit/Total revenues)
- Asset utilization: -> (it depends on the figure of the active interest rate and of the bank's structure of assets; totals operational revenues/Total assets)

The selected and analyzed banks are: Banca Comercială Română, Banca Română de Dezvoltare, Banca Transilvania, Raiffeisen Bank, Unicredit Bank.

Information processed from the financial statements (Balance Sheets and Profit & Losses) of the top 5 banks from the Romanian banking market (as per the date of the analysis):

Table 1: Structure of loans & total assets

in mii RON

Name of the banks	12/31/2015	12/31/2015	12/31/2015	12/31/2015	12/31/2014	12/31/2014	12/31/2014	12/31/2014
	Loans & advences to credit institutions	Loans & advances to customers	Total assets	Percentage of total assets	Loans & advences to credit institutions	Loans & advances to customers	Total assets	Percentage of total assets
BCR	184,631	32,548,724	59,460,913	**55.05%**	480,666	32,937,273	59,037,134	**56.60%**
BRD	2,287,837	26,376,425	49,192,866	**58.27%**	1,236,048	26,461,209	45,179,978	**61.30%**
BT	3,569,785	25,107,527	47,240,456	**60.70%**	2,216,105	17,517,192	35,619,512	**55.40%**
Raiffeisen Bank	1,138,893	18,153,586	31,443,125	**61.36%**	904,144	16,110,075	28,788,773	**59.10%**
Unicredit Bank	849,888	17,913,642	30,611,816	**61.30%**	543,125	16,970,281	28,698,395	**61.03%**

Source: Own processing based on data provided by the financial public statements of the banks

Table 2: Structure of deposits & total liabilities

in mii RON

Name of the banks	12/31/2015	12/31/2015	12/31/2015	12/31/2015	12/31/2014	12/31/2014	12/31/2014	12/31/2014
	Deposits from banks	Deposits from clients	Total liabilities	Percentage of total liabilities	Deposits from banks	Deposits from clients	Total liabilities	Percentage of total liabilities
BCR	10,837,456	39,973,916	59,460,913	**85.45%**	13,864,122	37,592,461	59,037,134	**87.16%**
BRD	781,180	41,191,873	49,192,866	**85.32%**	734,520	36,040,857	45,179,978	**81.40%**
BT	388,425	38,395,292	47,240,456	**82.10%**	133,348	30,045,502	35,619,512	**84.73%**
Raiffeisen Bank	2,251,557	23,739,592	31,443,125	**82.66%**	2,099,894	21,067,858	28,788,773	**80.47%**
Unicredit Bank	4,740,273	18,111,375	30,611,816	**74.65%**	3,596,087	16,240,745	28,698,395	**69.12%**

Source: Own processing based on data provided by the financial public statements of the banks

Table 3: Structure of loans & deposits – Loans To Deposits overview

Name of the banks	12/31/2015	12/31/2015	12/31/2015
	Loans & advances to customers	Deposits from clients	Loans to deposits Ratio (LTD)
BCR	32,548,724	39,973,916	**81.42%**
BRD	26,376,425	41,191,873	**64.03%**
BT	25,107,527	38,395,292	**65.39%**
Raiffeisen Bank	18,153,586	23,739,592	**76.47%**
Unicredit Bank	17,913,642	18,111,375	**98.91%**

Name of the banks	12/31/2014	12/31/2014	12/31/2014
	Loans & advances to customers	Deposits from clients	Loans to deposits Ratio (LTD)
BCR	32,937,273	37,592,461	**87.62%**
BRD	26,461,209	36,040,857	**73.42%**
BT	17,517,192	30,045,502	**58.30%**
Raiffeisen Bank	16,110,075	21,067,858	**76.47%**
Unicredit Bank	16,970,281	16,240,745	**104.49%**

Source: Own processing based on data provided by the financial public statements of the banks

Table 4: Structure of ROE, Equity & Loan To Deposits Ratio (LTD)

Name of the banks	12/31/2015	12/31/2015	12/31/2015
	ROE	Total capital ratio	Loans to deposits Ratio (LTD)
BCR	15.76%	18.90%	81%
BRD	7.8%	18.1%	64%
BT	18.48%	22.26%	65%
Raiffeisen Bank	15.30%	18.6%	76%
Unicredit Bank	8.38%	13.99%	99%

Source: Own processing based on data provided by the financial public statements of the banks

We have selected and processed the above mentioned data, formulas, relevant aspects from the literature/studies and performed our own financial analysis on banking indicators.

3.2 Financial analysis and correlations/results

Based on data selected from the financial statements of the banks and on our processed indicators, we have performed a financial analysis and present further on our correlations/results.

The analysis of the top five banks in Romania reflects complex correlations between liquidity, capital (equity), solvency, credits/deposits, the minimum reserve requirement (RMO) and the rate of the non-performing loans (NPLs).

In the second part of this part of the paper, we integrate the financial output and correlations with the context and regulatory frame, to relate the results to other banking systems and to the European banking system as well.

Based on literature review and best industry practices, in accordance with the topic of analyzing liquidity vs. lending mechanism, we select and reflect the results of the analysis via the following indicators/correlations: Loan-to-deposit ratio (LTD), Patrimonial solvency ratio, correlations between solvency / Non Performing Loans (NPLs) and the Minimum Requirement Reserve (imposed as a mandatory indicator from the regulatory authority), ROE and the Total Capital Ratio.

The analysis as presented in Figure 3, includes the important and relevant ratio of liquidity, which is the loan-to-deposit ratio. For the analyzed banks, it has an adequate level between 65% and 99%, with small fluctuation in the last 2 reported years, where the average growth is around 1% with a stable behavior.

As expected, considering the relevant literature and international standards, a comfortable LTD ratio is between 80%-90%. Other concerns are also related to the compliance in insuring an adequate level of the lending mechanism, within the post-crisis supervisory requirements set by central banks.

Name of the banks	12/31/2015	12/31/2015	12/31/2015	12/31/2014	12/31/2014	12/31/2014	2015/2014 %
	Loans & advances to customers	Deposits from clients	Loans to deposits Ratio (LTD)	Loans & advances to customers	Deposits from clients	Loans to deposits Ratio (LTD)	Evolution
BCR	32,548,724	39,973,916	**81.42%**	32,937,273	37,592,461	**87.62%**	**0.93%**
BRD	26,376,425	41,191,873	**64.03%**	26,461,209	36,040,857	**73.42%**	**0.87%**
BT	25,107,527	38,395,292	**65.39%**	17,517,192	30,045,502	**58.30%**	**1.12%**
Raiffeisen Bank	18,153,586	23,739,592	**76.47%**	16,110,075	21,067,858	**76.47%**	**1.00%**
Unicredit Bank	17,913,642	18,111,375	**98.91%**	16,970,281	16,240,745	**104.49%**	**0.95%**

Figure 3: Top five banks Loan-to-deposit ratio (LTD)
Mii RON

Source: Own processing

Figure 4 presents some descriptive elements of top liabilities indicators regarding patrimonial solvency. Within the best practice areas, it is considered that, generally, the patrimonial solvency has to be between 0,3%-0,5%, when reflecting a normal situation.

All 5 banks have a predictable and sustainable patrimonial solvency, that tend to show quotas between 10%-13%, with very little variation from y-t-y (-1% and + 2%); this shows a good long term financing equilibrium that can sustain the net assets debts and long term (LT) debts financed by the own banks' equity.

Name of the banks	2015	12/31/2015	12/31/2015	2014	12/31/2014	12/31/2014	2015/2014 %
	Equity	Total liabilities	Patrimonial solvency ratio	Equity	Total liabilities	Patrimonial solvency ratio	Evolution
BCR	6,142,989	59,460,913	10.33%	5,110,897	59,037,134	8.66%	1.67%
BRD	6,257,443	49,192,866	12.72%	5,750,215	45,179,978	12.73%	-0.01%
BT	6,016,381	47,240,456	12.74%	3,701,961	35,619,512	10.39%	2.34%
Raiffeisen Bank	3,158,241	31,443,125	10.04%	3,266,866	28,788,773	11.35%	-1.30%
Unicredit Bank	3,149,343	30,611,816	10.29%	2,925,122	28,698,395	10.19%	0.10%

Figure 4: The patrimonial solvency distribution
Mii RON

Source: Own processing

Figure 5 presents the important correlations between macro and micro economic indicators. Analyzing the top 5 banks in the local Romanian banking sector, we can present the correlation between the reducing of the Minimum Requirement Reserves (known as RMO) on one hand, that generated free extra capital for lending, and on the other hand, that it directly impacting on solvency, which tend to have good levels between 17%-19% (very much above the minimum NBR requirements of 10%). Due to the Minimum Requirement Reserves, in early January 2015 the central bank lowered reserve requirements for foreign currency liabilities by 2 pp., thus reaching 12%, thereby releasing about 450 million EUR in the market.

The same decision was taken at the end of 2015, to the level of 10%, considering that at the end of September 2014 the same indicator was 16%.

Name of the banks	Solvability Ratio for Y 2015	NPLs For Y 2015
BCR	19.6%	20,20%
BRD	18.1%	20%
BT	17.32%	10%
Raiffeisen Bank	17.5%	8%
Unicredit Bank	13.99%	10%

**min. NBR level 10%*

	Jan-Sep 2014	oct-mar 2015	>mar 2015
RMO lei	12%	10%	8%
RMO valuta	16%	14%	10%

Figure 5: Correlations between solvency – NPLs – RMO
(Minimum requirement reserve)

Source: Own processing

Considering also data from European Banking Authority, our paper reflects that solvency and capital rates of top five banks in Romania have an important advantage with the competition from similar EU members. In this respect, the first three banks (BCR, BRD and BT) have registered at the date of the analysis a return on capital requirements of 16,4% were in countries like Austria or France the same ratio indicates only 8,4% and 7,4% (considering data from ECB). This was mainly due to the revenues that cumulated nearly half of total equity, where most of total revenues (28%) are from net interests (difference between credit interest and deposit interest).

Figure 6 and 7 presents important correlations/results of our analysis, between return on equity (ROE), total capital ratio and the LTD. In accordance with the indicators mentioned, it can be added the relevance of the credit risk ratio and the market risks (it is accepted market risk include risk of interest rate and currency risk). The most important market risk, nevertheless, it is considered to be the liquidity risk.

Regarding capitalization, the analysis reflects that it remained exceptionally strong for the banks, ready to support business growth.

for 31.12.2015	*BCR*	*BRD*	*BT*	*Raiffeisen Bank*	*Unicredit Bank*
ROE	16%	8%	18%	15%	8%
Total capital ratio	19%	18%	22%	19%	14%
Loans to deposits Ratio (LTD)	81%	64%	65%	76%	99%

Figure 6: Indicators/correlations between liquidity and profitability

Source: own processing

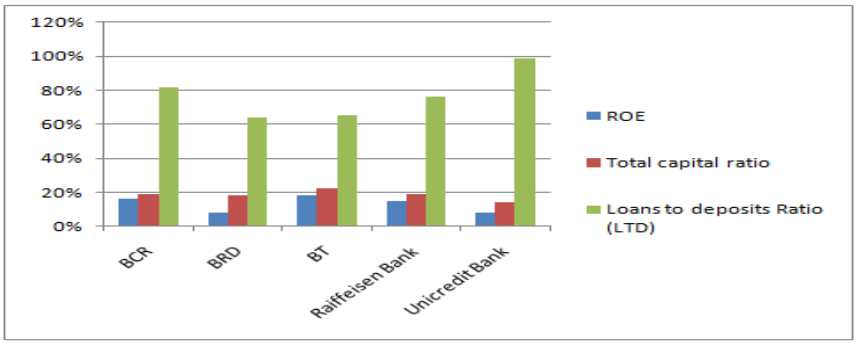

Figure 7: Liquidity, capital and profitability

Source: own processing

Implementation of financial forecasts regarding risk data, which link the capital / liquidity, and changing macroeconomic conditions represented the way to manage the financing risk.

Liquidity strategy was defined according to the risk appetite of banks and in accordance with internal limits and regulations. The liquidity strategy contains developments, rules and purposes including (but not limited to) regulatory requirements (e.g., liquidity coverage ratio or net stable funding ratio (NSFR)), reserve liquidity, financing plan and the maturity profile of the debt issued, secured and unsecured by the interbank funding.

In respect to the previous analyzed indicators, because of the new regulatory framework imposed by central banks, the liquidity standards implemented by Basel III requirements include as a main objective: the banks to maintain an adequate level of equity, capital and high quality liquid assets.

Our analysis presents a post-crisis liquidity impact related to the non-performing loans and the associated provisions, that were cut-off from banks' profits.

Two of the five largest local banks, BCR and BRD, recorded at the end of 2015, a rate of NPLs well over 10%; the other three from the top five banks: BT, Raiffeisen and Unicredit have managed to maintain a level of equilibrium, between 8% and 10%.

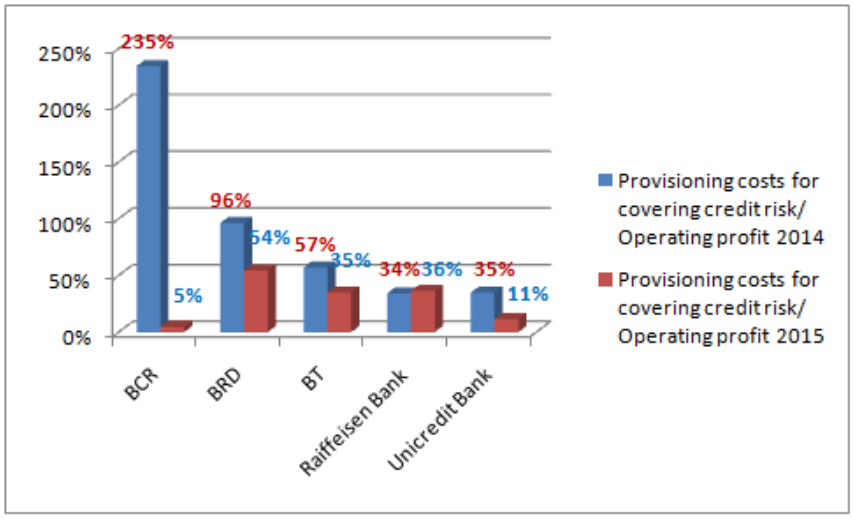

Figure 8: Costs of NPLs provisions related to operating results

Source: own processing

The analysis presented in the figure above, reflects the correlation between costs with provisions (for NPLs) and the operating results of the banks. The peak of the difference between the cost and operating result appeared in 2014 with a high impact over 2015, when for example, the most relevant bank in this situation was BCR (with 235% costs), considering the boards' strategy of the bank to clean-

out the non-performing loan portfolio and thus, to create high provisions. The trend of reducing costs with provisions was established for the year 2015, as a base for future lending.

As a strategic part of our analysis, taking into consideration that liquidity is so much linked with the perceptions of the stakeholders (depositors, banks, authorities, banking customers for financing products, central banks, governments) and in order to integrate the correlations/results into the context, we add some descriptive statistics, relevant for the Romanian banking system, for other banking systems in the region, but also for the European banking system.

Relevant indicators of liquidity for the Romanian banking system, as follows:

- *Immediate liquidity*: the ratio stood at 40 percent at the end of 2015 (close to the year before, with a comfortable position);
- *Quantitative standards: liquidity coverage ratio (LCR) and net stable funding ratio (NSFR),* set forth by the Basel Committee on Banking Supervision (BCBS) in December 2010; the minimum LCR requirements registered 60% in October 2015, and is going to reach the level, according to previsions in 2018, as per the relevant information data presented by the National Bank of Romania in the 2015 Annual Report;
- *Liquidity ratio*: according to the NBR regulations set into force, for economical agents that operate in lei equivalent, by maturity buckets, having in this regard over 1 recommended liquidity ratio; (important to mention is that liquidity ratio is calculated as of Effective liquidity/Required Liquidity);[8]

Nowadays, in the financial banking system, liquidity seems to occupy a centre point in the development of a sustainable financial market, which has to avoid the main negative triggers of economic crisis. Another important aspect is that in order for a bank and thus for the entire banking system to be solvable, capital has to be adequately recognizing all prior requirements in reliance to the stated regulations set-up by the central bank.

The structure of the banking system is influencing the aggregate indicators at the system level but also the relevant indicators of the individual banks, the business relationships between banks and customers. The structure9 of banking

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[6] According to the Bank for International Settlements, is considered, the expression of "a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. The fundamental role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk, both of an institution-specific nature and that which affects markets as a whole. Virtually every financial transaction or commitment has implications for a bank's liquidity. Effective liquidity risk management helps ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by external events and other agents' behavior"

[7] for example, the structure of the German banking system includes three main pillars: 1) Co-operative banks (Central:Deutsche Zentral Genossenschaftsbank, Westdeutsche Genossenshafts-Zentralbank and Regional:1078 Volksbanken, Raiffeisenbanken); 2)

systems is a result of a complexity of factors, including economic, political, social and technological ones, related to the evolution of each country.

Both in Europe and Romania, the financing of the economy is relying mainly on bank financing, the fact being emphasized within the financial and economic crisis that started in 2008.

The Romanian banking sector remained, in 2015 at 36 banking institutions, leading to more concentration. Along the downstream system that was set-up as a regulatory framework in 2012, the loan-to-deposit ratio reached 85.8% in December 2015.

The group of banks with Greek majority share capital with high volatile liquidity requirements, succeeded to gain a raise in the volume of deposits, in order to maintain at the end of 2015 an adequate level of capital and solvency. The loan-to-deposits ratio presented a similar outstanding over the region, due to the fact that financial institutions that grant credit, started to rely more on local market funding instead of foreign financing.

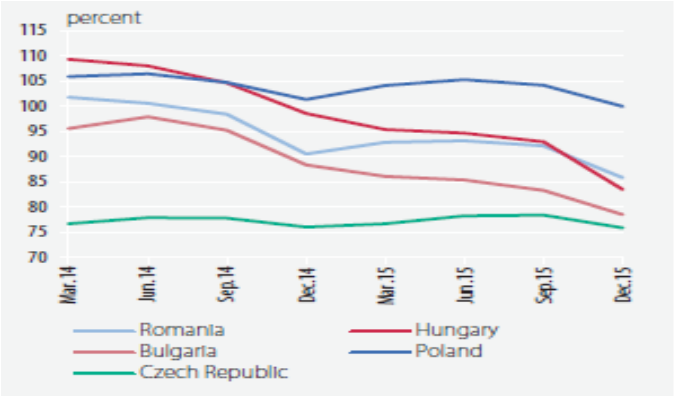

Figure 9: Loan-to-deposit ratio (regional comparison)

Source: ECB, NBR

Considering the above-reported evolutions, it should be stated that cross-border financing, open capital markets, cross-border flows represents catalyzers for liquidity, at a global/European and local level. The structure of the banking system, the various banking business models, the specificities of the different banking markets are shaping the liquidity and all the aggregate indicators. Both at macro and micro level, liquidity is a top concern for regulators, for bankers and also for the customers, as beneficiaries of the financing.

Private banks (Large:Deutsche Bank, Commerzbank, HypoVereinbank, Deutsche Postbank and Online Banks:ING-DiBa, Comdirect Bank, and Private Banks and Specialist banks: Volkswagen Bank); 3) Public Banks (Deutscher Sparkassesnund Giroverbang: 421 sparkassen, Landesbanke, Bayern LB, Bausparkassen (building societies) and Promotional banks: KfW, as presented in The Banker

4. Discussions – thinking outside the box/a conceptual approach on liquidity

In this part of our research, we add some qualitative insight/relevant discussions that are ongoing, concerning liquidity, regulatory frame, impact on the bank's relevant indicators and some strategic questions, that are shaping the conceptual approach on liquidity. Some of those aspects will be subject to further research.

From a bank's strategic business plan, top objectives should be included and harmonised, influencing strongly on liquidity:

Maintaining an optimum level of the assets with high liquidity rate

The diversification of the financing mix (the structure of the granted loans and the maturity of deposits on short term and long term)

Placements made throughout other banking institutions

Investment and lending activity from "traditional" sources, such as deposits

In this consideration, some of the main indicators used to determine an equilibrium/balance from the liquidity perspectives are: loan to deposit ratio, quick liquidity, global liquidity, deposit ratio liquidity and deposits + loans ratio liquidity.

As presented, liquidity permits a holistic view, different perceptions, different definitions, different forms that are also evolving, being deeply related with the dynamics of the financial environment and with the deepening of knowledge in assessing, monitoring and managing liquidity and liquidity risk.

By increasing the knowledge in measuring liquidity risk, both from a quantitative dimension (via risk metrics, stress testing methods, data analysis systems, integrated risk management tools) and from a qualitative dimension, understanding the correlations with other relevant financial and non-financial indicators, the approach on liquidity is changing as well.

All the relevant variables favouring liquidity are changing every day.

When a shock comes in the market (e.g. in 2008), many banks, despite their adequate capital levels, have trouble. A stressful event determines a rapid reversal; liquidity evaporates from the market, both at the individual bank's level and at the systemic level. There are diverse factors that are influencing, in a crisis time, liquidity and behaviour of the customers, bankers, regulators, politicians. The concept of liquidity and the perception of liquidity is changing, by learning and not forgetting the tough lessons of the crisis.

The complexity of the banking business, the complexity of some banking organisations, the complexity of their activities and products, the diversification of their balance sheets and funding alternatives determine changes and new approaches for liquidity.

The changes in regulations, new principles and paradigms for risk management, new capital buffers, new correlations between the relevant indicators of the banks, the strive for a new banking model, a more pro-active and sustainable

one over the long run, represents other aspects that reflect the changing and complex profile of the liquidity concept.

As reflected within the analysis of the top five banks acting on the Romanian banking market (where liquidity and profitability ratings are very close to one another), from a strategic perspective, how it is important to position themselves, as a more liquid bank or a as more profitable bank? How should be a bank's position regarding liquidity/solvency/profitability on short run, but over the long run?

We will approach and develop further research related to those matters.

Every banking institution should plan strategically and find the right mix of instruments, in order to develop a balanced and sustainable business, in accordance with the expectations of all the relevant stakeholders.

The major difference between liquidity risks and level adequacy, both in the past and present times, is the conclusive background regarding the banks' lending mechanism, in accordance with cash availability, at the request of its deponents and debtors. Nevertheless it must be taken into consideration the fact that the credit facility borrowers may have a centre stage role in maintaining liquidity properly to the confrontations of new paradigm markets, regardless of the risks that collide.

Maintaining the bank's liquidity at normal rates to ensure the stability and transparency of a banking system and of a bank in particular has to have a widely spread, its methods cannot be viewed as isolated, at its core foundation relaying on two fundamental set of rules that interact. One is the capital requirement of the banks and the other being the governing rules of resolution (of preventing major restructuring or bail-out portfolios of banks).

Thinking outside the box, it can be stated that from an empirical point of view, at a bank's individual management, the higher the capital requirement and availability, the less the adequacy of liquidity is needed. When the levels of capital diminish, the central bank, as a lender of last resort, will increase its ability to take countermeasures in terms of inadequate liquidity levels that can unfortunately conclude in some solvency issues to be managed with difficulty.

An adequate level of liquidity, related with a strong management of liquidity determine a strong signal of confidence, both for the customers and supervisory authorities, but in fact for all the stakeholders, contributing to a sustainable development of the financial markets.

Liquidity is also related with expectations and attitudes, risks and regulations, as reflected in the graph below:

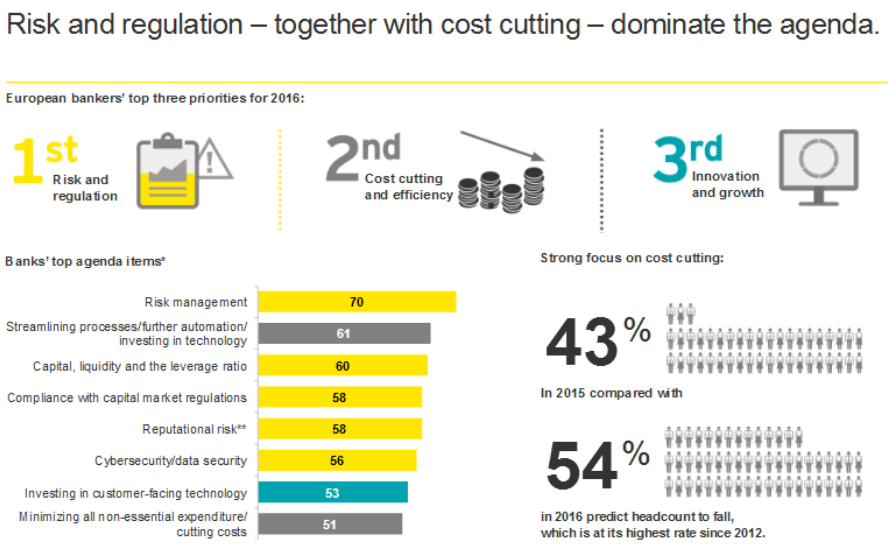

Figure 10: Setting off "a big picture" view over risks and regulations in the European context

Source: European Banking barometer 2016 – Seeking stability in an uncertain world; EY Survey 2016

As the conceptual relationships reflect, if lower levels of liquidity are achieved, the bigger the need for capital requirements in order to protect the bank from capital shocks. This is the reason, within economical post crisis context, that central banks have raised the issue of establishing new capital criteria that involve rising of share equity and other types of capital (e.g Tier 1 capital), especially for the banks that rely and were relaying only on wholesale funding (considered to be a less adequate and strong source of funding).

At the European level, regulatory changes, low interest rates, digitalization of financial services, increase use of technology to support the banking business, the management of Non-Performing Loans (NPLs) are among the most prominent trends within the post crisis environment.

Nevertheless, risk capital requirements are important for ensuring enough own funds to cover unexpected losses, sufficient to prevent banks and credit institution in general, from taking on leverage risks.

In addition, when the harmonisation leverage ratio is due, before 2018, European Union member states may have the possibility to take measures they find appropriate, including actions to mitigate systemic risks (an observation period was set, until 1 January 2017). Moreover, national authorities may request or demand banks to hold, besides the minimum regulatory requested adequacies for capital, several capital buffers; the requirements for capital buffers is applied starting January 2016.

The discussions on liquidity and changing paradigm should also include the developments at the European level and the effects of the new mechanisms

both at a macro level, on capital, supervision, lending, systemic risk management but also at micro level/bank's individual level, on aggregate indicators of a bank (e.g. liquidity, solvability, performance, capital). Being in line with the approach of our research, we point the mechanisms and some relevant aspects to be analysed and considered within further research.The new post crisis European paradigm includes two important mechanisms that reflect both strength and durability in the regulatory legislative banking environment: Single Supervisory Mechanism (SSM)10 and Single Resolution Mechanism11 (SRM), that are pillars of the Banking Union. The third pillar of a fully functional Banking Union should be a common Deposit Guarantee Scheme. It is concerned that the current set-up with national deposit guarantee schemes allows vulnerabilities to large shocks within future crisis, including liquidity risks. The implementation of the first two pillars and the development of the third, strongly impacts on capital, liquidity, solvency, both at a systemic level and individual bank's level. It impacts also on perceptions and consumer behaviour, as reflected by relevant studies and surveys. In comparison, considering the United Stated banking market, new mechanisms were also developed and presented by the Federal Reserve, in the last quarter of year 2016, to ensure a durability and strong perception of liquidity in need of striving to shocks: the post-crisis regulatory framework, reflecting the Dodd-Frank Act and the Basel III capital and liquidity requirements; voluntary changes in dealer risk management practices and balance sheet composition following the housing market boom and bust; changes in market structure with the advent of electronic trading; the changing landscape of institutional investors, including the evolving liquidity demands of large asset managers; changes in expected returns associated with the economic environment and the stance of monetary policy.12

5. Conclusions

Liquidity is not an easy concept to understand, explain, use and monitor. Its complexity derives from the various approaches, from the diversity of data and from the diverse and complex banking structures that report, in an aggregate or individual manner.

The concept of liquidity evolved together with last developments within the financial global environment, mainly after the financial and economical crisis from 2008. Liquidity indicators evolution, liquidity risk monitoring are key

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[8] *The Single Supervisory Mechanism (SSM)* - comprises the ECB and the national competent authorities (NCAs) of participating Member States and is responsible for the prudential supervision of all credit institutions

[9] *The Single Resolution Mechanism (SRM)* started in January 2015, includes the Single Resolution Board (SRB) and National Resolution Authorities of the participating Member States of the Banking Union and impact on working framework, resolution plans, aiming to reduce the impact of banks with low profile or risk profile in the regulatory lending sector, but also on public finances and real economy

[12] *Market Liquidity after the financial crisis*; FED Staff Report No. 796, Oct 2016 (page 2).

elements, both at a systemic level and at bank's individual level. Liquidity is directly linked with capital, contributing to a sound management of the banking business. Various types of liquidity, from central bank liquidity, to market and funding liquidity are evolving and changing the factors upon they are constructed/formed.

Understanding and maintaining adequate levels of liquidity, capital adequacy and solvability, in a globalized financial market, monitoring the surplus of risk taking, leveraging and credit creation are at a highest relevance at the international (global), European and national levels. Liquidity and capital regulation framework, other regulatory mechanisms, contribute to increase the resilience of financial institutions.

The changes in the regulatory framework are influencing significantly the liquidity and all-important banking indicators. The new framework should contribute to a better management of the risks at the systemic level, to better assessment of vulnerabilities and endemic shocks, taking actions to built resilience only if there is full implementation by banks and supervisors. Nevertheless, the new regulatory framework, both at the European and at the Romanian system level, should also create the opportunity for the banking systems to contribute to economical growth and to provide financial support for the real economy. As the crisis period reflected the rapid reversal for all aimed indicators, a quick change in behavior of the market participants, the evaporation of liquidity and propagation of other risks, by contagion, it is important to emphasize relevant aspects concerning liquidity:

1. Prudence should be a key element in managing liquidity
2. A strategic point is represented by the correlation, active monitoring and assessment of the effects on the financial standing of a bank, between all relevant banking indicators
3. From the liquidity point of view, both short term monitoring and long term alternative scenarios should be drafted, analyzed and adjusted
4. Loans to Deposits ratio is a very important banking indicator to follow, in order to insure an adequate and sustainable level of lending and comply with supervisory requirements
5. Adequate levels for other indicators, such as patrimonial solvency, capitalization reflect long term financing equilibrium
6. Within the post crisis context, both at the Romanian and European level, a specific concern should be the correlation between costs with provisions (for NPLs) and the operating results of the banks
7. Long term objectives and planning should prevail for banking business, monitoring all the relevant indicators, but in strict coordination with a proactive management of the risks (including liquidity risk), the correlations between them and the impact at the bank's level;
8. Regulations/best practices should be successfully implemented/adapted and periodically revised, in accordance with market evolutions;

9. Strategic partnerships with other banks/other financial institutions that are “liquidity holders” (very valuable in crisis/panic times);

10. Specific tools and instruments, mix of quantitative (metrics based instruments) and qualitative analysis, education and continuous learning applied, research, contribute to better asses, monitor and manage liquidity;

11. Cooperation between all the relevant actors within the interconnected financial markets, sharing information and proactively managing new situations and events, create the base for managing liquidity in a sustainable manner, both at the systemic level and bank’s individual level.

12. Communication scenarios for banks and banking authorities (including for crisis events) and communication capabilities should be developed, tested and functional, due to the social media, technological evolutions and to the influence of perceptions (of all the stakeholders) over liquidity (at systemic/individual bank’s level)

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