PhD Thesis

Summary

LIQUIDITY MANAGEMENT AND PROFITABILITY IN BANKING

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2. Research motivation and objectives

Liquidity, the ease of converting assets to cash, is probably one of the most controversial terms in both finance and macroeconomics. In times of economic boom, liquidity is abundant, whereas when crisis erupts, liquidity disappears as if it didn’t exist at all. The financial innovations constructed in the past decade with the aim of reducing the cost of urgent funding, are considered to be blurring the boundary between illiquidity and insolvency risks. Under these circumstances, liquidity adequacy in the banking system, the first support of the global economy, and profit maximization – the central objective of each economic and financial entity – will sustain the needed confidence climate in easing credit rotation throughout an environment subject to a continuous change, which is difficult to closely follow and control accordingly through appropriate rules of law.

Problem statement, research aim and objectives

The recent financial crisis was the last major event following a series of other similar event, such as the Asian crisis in 1997, the Russian default on short-term debt and the downfall of the hedge fund long-term capital management in 1998, the disruption in payment systems following the World Trade Center attack in 2001 and the major defaults of Enron and Worldcom, that increased management’s attention to liquidity risk. Particularly, the banking system understood that adequate systems and processes for identifying, measuring, monitoring and controlling liquidity risks help them to maintain a strong liquidity position, that in turn will increase the confidence of both investors and rating agencies and improve the cost and availability of funding. Furthermore, the authorities also recognized the importance of liquidity for the stability of the financial system and the new Basel III regulation strive to minimize the impact of liquidity failures on the system as a whole.

It is therefore justified the research on the management of bank liquidity and its impact on bank profitability, given the prevailing reverse relationship between them. Thus, this research is aimed at supporting the final decision-makers on the measures necessary to be taken in order to revert to the upward trend that triggered the developments in the banking sectors of Central and Eastern Europe in the pre-crisis period, in a sustainable manner, with the following objectives:

- exposing new conceptual approaches of bank liquidity and of the liquidity risk in the literature: definitions, positioning in relation to the other financial risks, measuring instruments and proposals for their update;
• updating principles, instruments and strategies of bank liquidity management;
• comparative analysis of the evolution of the liquidity and profitability indicators in the banking sectors of Central and Eastern Europe;
• defining the bank liquidity optimum under different models in the literature;
• identifying the factors of influence over liquidity and profitability as well as the changes in the structure of these determinants as a result of the recent financial crisis, in Romania and in Central and Eastern Europe;
• quantifying the marginal impact of bank liquidity over the profitability with the aim of optimising liquidity-profit ratio;
• optimizing long-term liquidity-capital – profitability ratio, in compliance with the new rules Basel III.

In this context, the research problem is the identification of the bank liquidity optimum from different perspectives regarding the impact on profitability in the banking sectors of Central and Eastern Europe, with the fundamental objective of optimizing the liquidity-profitability ratio in banking activities.

Thus, this thesis responds to the current main concerns of the monetary authorities governing European banking systems, being an innovative approach of the liquidity-profitability trade-off issue, from the perspective of the research methodology used in the literature - this is the first study of its kind in the Central and Eastern Europe - , taking into account the recent Basel III regulations and their revisions in January 2013 dictated by imminent over-regulated banking sector – and potentially, non-profit.
3. Research methodology

The qualitative research, consisting in the review of theoretical and empirical studies and the analysis of further evolutions of the liquidity and profitability indicators as well as of the financial indicators determinants, preceded the quantitative research such based. In this context it was appropriate to apply the procedure of triangulation of the information obtained, which has allowed the interaction of the economic fundamentals with statistical methods, in order to avoid epistemologic inconsistency.

The qualitative analysis of the economic and financial situation has been constructed on the basis of the comparative evolution of the indicators investigated previously framed in tables and graphics, as well as on the basis of a case study concerning the common practices of the bank liquidity management. Quantitative analysis of the data has been carried out through the least squares method and the method of generalized moments that allowed an estimation of the linear and non-linear multiple regression coefficients.

So, in addition to the statistical validation of the empirical procedures used on the sample selected from Central and Eastern Europe, it has been possible an external conceptual validation of the findings of this research, a result of long debates regarding their pertinence, timeliness and their plausibility with the scientific supervisor and the members of the doctorate commission for guidance, and also, the validation of the internal legitimacy of empirical study through appropriate positioning in the literature.
4. Chapters content and conclusions

In Chapter 1, the theoretical/conceptual fundamentals of bank liquidity and the risks associated were meant to outline the general quality and the measuring instruments of liquidity but also to differentiate the liquidity risk of other financial risks. The recent global financial crisis has highlighted the importance of liquidity in the banking sector, by bringing in the state of insolvency many profitable banking institutions, therefore it is justified to introduce new measures of bank liquidity, as the new Liquidity Mismatch Index, which takes into account the shadow banking system, repo market size operations and the extent of exposures on mortgages residential or derivatives of credit and systemic risk, quantifying the impact of 'delta' variations of the liquidity on the differences in 'delta' profit.

The main conclusions of the analysis of the liquidity indicators evolutions in banking systems in Romania and Central and Eastern Europe in the period 2002-2010 capture:

- an uniform evolution of bank liquidity in the countries analyzed, the crisis of 2008 bringing declining liquidity rates and positioning Romania at the comfortable extreme along with the Czech Republic, whose pace of evolution Romania follows in the case of the aggregate indicator of liquidity and interbank financing dependence measure;
- the measure of the financing dependence of the interbank market places Romania at the vulnerable extreme as compared to the other countries of Central and Eastern Europe, vulnerability accentuated by the discrepancy between the share of foreign assets and the share of foreign liabilities, predominantly financing from mother-banks which, being on the medium and long term, does not raise major problems.

The determinants of bank liquidity in Romania and Central and Eastern Europe estimated by a model of multi-linear regression could be summarised in the following conclusions:

- the non-performing loans and the loan loss provisions associated with them are predominant influencers of bank liquidity both in Romania and in Central and Eastern Europe;
- in the crisis period, 2008-2010, the degree of banking concentration is exerting a significant negative influence on bank liquidity from Central and Eastern Europe;
- a validated influence on bank liquidity in Romania: the positive impact of reducing ROBOR on liquidity, can be considered as of conjuncture, because the reduction of the rate of interest shall determine, under normal conditions, a decrease of bank liquidity, in the view of the reduced cost of its procuring.
In Chapter 2, the foundations of bank liquidity management tactics exposed complete the image built up until then, together with the principles to be followed as well as with current examples of management tools of bank liquidity. An adequate level of liquidity and adequate sources of liquidity will depend on the nature of the funding need. But since the risk of liquidity is subject to various scenarios, for the unexpected liquidity needs, managers need to use sets of projections of cash flows according to certain scenarios. Here, it is necessary to differentiate between risk idiosyncratic/specific and systemic risk and also the recognition of the fact that stress tests are only part of a complete integrated and dynamic process of the bank liquidity management.

The comparative study on liquidity management strategies published by Deutsche Bank, Germany and ERSTE Bank Romania, emphasizes the following particularities, in fact intuitive:

- the focus of Deutsche Bank on the level of the daily recorded liquidity and the liquidity needs considering the ability to obtain liquidity from the Central Bank;
- a more open position to external funding of the Deutsche Bank and, by default, larger possibilities of cooperation in the plan of attracting such funds under optimal conditions.
- a prudential behavior of ERSTE Bank Romania, under the aegis of stricter regulations of the country of residence where the risk aversion is high, and also the financing from the bank-mother.

In Chapter 3, the reference studies in the literature offer several approaches on liquidity optimum by considering the costs level, given the cost of opportunity of holding liquid assets with low profitability, the biggest costs being associated with excess liquidity held unintentionally. But minimising costs and maximizing profits have assigned a common 'efficiency frontier’, which causes, naturally, conditional substitution upon those two objectives in the literature of the past few years, the profitability constituting a measure effective and relevant for banking management efficiency. The recent theoretical model with regard to the optimal bank liquidity under the recent crisis covers a well delimited segment of the impact of the opportunity to obtain additional profits from assets purchase at fire-prices on the level bank liquidity. External agents interventions change the level of the liquidity available for such purchases for surviving banks, depending on their proportion.

The Central Bank, as the lender of last resort is a determining factor for the ex ante establishment of sub-optimal levels of bank liquidity, a fact consistent with Austrian School critics’ arguments who claim that the Central Bank takes the care for liquidity from banks ensuring its involvement in critical situations, intervention which, despite its effects a priori
negative, will not be possible to be eliminated, since it is supporting the necessary credibility associated with the state and the need for stability of the nationals.

The objective of optimizing the liquidity - profitability ratio in banking activity is carried out in Chapter 4, through statistical methods for estimating the linear and non-linear regression coefficients, by measuring the marginal impact of liquidity on return of equity and return on assets. The evolution of profitability indicators in the banking systems of Central and Eastern Europe imposed the separate analysis of the crisis period, 2008-2010, the period in which there have been significant reductions up to negative values.

Identifying the determinants of bank profitability, as a preliminary step, has allowed contouring the following conclusions:

- the liquidity rate, the cost to income ratio and net interest margin are the common factors of influence over profitability, measured as the return on equity and return on assets, for all the analyzed periods, pre-crisis, post-crisis and the whole period; the non-performing loans rate is a decisive factor in the crisis period, generating effects throughout the whole period analyzed;
- in the pre-crisis growth period 2002-2007, it is confirmed a positive determination between the risk premium and the profitability, determination represented by the aggressive behavior in assuming high risks, which has led, eventually, to crisis;
- during the crisis period, 2008-2010, the degree of concentration has a negative impact on profitability, influence consistent with current economic reasoning according to which the negative effects of the crisis have been much stronger in more concentrated banking sectors;
- also, the crisis period emphasizes funding liquidity as a determining factor for profitability in a negative direction, otherwise a predictable fact, given vulnerability, as evidenced in this current turbulent context, of the preponderance of short-term funding.

On the basis of these validated determinations, it has been possible to quantify the marginal impact of liquidity on the profitability, resulting in the size of optimal permanent bank liquidity, represented for all the three periods through the following rates:

- During the period 2002-2010, the optimal margin of variation of bank liquidity is located at 12,9054 % to maximize ROE and at 15,7810 % to maximize ROA;
- during the period 2002-2007, the optimal margin of variation of bank liquidity is located at 16.5450 % to maximize ROE and at 7.7554 % to maximize ROA;

- during the period 2008-2010, the optimal level of bank liquidity from time t-1 is located at 15.5935 % to maximize ROE and at 16.5059 % to maximize ROA;

As indicated by the descriptive statistics, the crisis had stronger negative effects on the return of equity, which corresponds to narrower optimal intervals of liquidity variation, as compared to return on assets, both in the 2008-2010 period and the 2002-2010 period. During the period of growth, the report shall be changed, resulting in optimum levels more permissive to maximize profitability of capital, which is testimony inadequate policies for the management of liquidity which have resulted in crisis comes.

In the last sub-chapter, the integration of the most recent indicators regulated through the Basel III Agreement, respectively the net stable funding ratio and the ratio of common equity capital, has allowed a statistical estimation on the basis of the calculations carried out for the entire 2002-2010 period on the sample considered above, of the optimal ratio between these indicators under the influence of real interest rate, ratio that will maximize return on capital.
5. Research contributions to literature

In the end, exposing the main elements of the author's own contribution is likely to emphasize the added value brought by this research to the literature. Thus, the main contributions of this research are integrated in the whole content of the work, by bringing together:

- a summary report on the elements of the defining bank liquidity and of the instruments and strategies for management of bank liquidity, by integrating new proposals relating to the measurement of liquidity and liquidity risk in the post-crisis era;
- the assessment of the optimal level bank liquidity from the perspective of theoretical and empirical tools used in the literature and by reference to the Central Bank involvement, as the lender of last resort and to the occurrence of the liquidity trap;
- the analysis of the evolution of liquidity and profitability indicators of banks in Romania and Central and Eastern Europe in the 2002-2010 period, highlighting the implications of the recent global financial crisis;
- cumulation of the effects of the simultaneous action of external agents on the optimal bank liquidity, in the framework of a theoretical model concerning reserves of liquidity in times of crisis, depending on the proportion of the banks in difficulty;
- empirical validation of hypotheses on potential determinants of bank liquidity and potential determinants of bank profitability, with the separate analysis of the impact of the crisis on their structure and their relevance;
- empirical validating the non-linear relationship between liquidity and profitability in the banking sector;
- determining the liquidity impact on the profitability and proposing a model to optimize bank liquidity level in Central and Eastern Europe by reference to the objective of maximizing bank profitability and giving a quantitative expression of the margin of variation of the permanent liquidity;
- integrating the new indicators the net stable funding rate, the measure of liquidity on the long run and the rate common equity capital, introduced by Basel III, in a new model to optimize the relationship between them, depending on real interest rate, with the aim of maximizing return on equity; however, compliance with the rules with regard to liquidity recently adopted through the Basel III Agreement does not provide management efficiency, neither comfortable positioning in market - financial results and the level of the profits are the first information accessed by potential partners, corporate or retail, with a view to decision substantiation of investment/lending and situating profitability over the market average, with maintaining the permanent liquidity must constitute the main objective of bank management.
6. **Further paths for extending research**

- Study extension throughout the European Union, with the corresponding grouping of areas according to the specificity
- Interdisciplinary investigation of the liquidity trap including the influence of the psychological factors in the decision making process both at the level of individuals and at the level of financial and banking institutions
- Investigation of immediate reactions of credit institutions and other financial agents (capital markets) to the actions of monetary authorities, by highlighting the impact the anticipation trap.
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