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Bank Risk Management and Liquidity Management in Crisis Scenarios based on the Basel III Agreement

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Abstract: *The complexity of the banking system and its operations generates the need for a daily effort of risk monitoring and management as a prerequisite for maintaining activities in normal parameters. This chapter approaches the current issues of banking management in terms of the risks amplified by the economic crisis, liquidity risk analysis methods and alternative crisis plans under the Basel III Agreement.*

Keywords: *Risk management; liquidity management; Basel III agreement; crisis scenarios; banking system* ***JEL:*** *G21, G32, G33*

I. Introduction

Over the last decade, the banking sector has been exposed to new risks. The main factors influencing the system/ banking sector in the current market economy are:

- globalization;
- liberalization and diversification of financial markets;
- strong competition between Credit Institutions;
- the multitude of products and services offered by Credit Institutions, etc.

The new capital agreement, Basel III, introduced capital requirements and expanded qualitative capital requirements, new liquidity requirements, a credit counterparty credit risk review, and a benchmark for banks in member countries of the Basel Committee (the Basel III Agreement).

The requirements of the Basel III Agreement are being implemented gradually from the 1st of January 2014 until the end of 2018 with a major impact on the profitability of credit institutions. A challenge for Credit Institutions is the solvency and liquidity requirements imposed by the Basel III provisions, which can lead to a change of the ways of banking business.

By means of the EU Delegated Regulation No 61/2015, the detailed liquidity coverage requirement in accordance with Article 412 (1) of Regulation (EU) No 573/2013 shall be equal to the ratio between a credit institution's creditworthiness reserve and its net outflows of liquidity during a 30-day crisis period and is expressed as a percentage as follows:

LCR = (Liquidity Outflow) / (Net Liquidity Outflows) = (Liquidity Reserve) / (Liquidity OutflowsLiquidity Inputs) (%).

The liquidity coverage requirement (in accordance with Article 412) will be introduced according to the following gradual schedule:

- 60% of the need to cover liquidity in 2015;
- 70% as of 1 January 2016; - 80% starting January 1, 2017; - 100% starting January 1, 2018.

The effects of Basel III, in view of the liquidity requirement, were more felt on standard bank products for the corporate segment than on retail products.

The purpose of the Basel III Agreement is to strengthen the stability of the banking system by redressing the shortcomings highlighted by the current crisis. Improving the quality of the capital base and the new standards in liquidity management are designed to strengthen banks' ability to absorb shocks, avoiding the use of public funds for recapitalization, beneficial effects by default to consumers, investors or governments.

Basel III is more than just a regulation for financial institutions in a Post-crisis world and will fundamentally affect the profitability of the banking industry. Reforms target the micro-prudential level, with the aim of increasing the resistance of individual banking institutions to stress and macro-prudential periods, in order to reduce the frequency of financial crises. The new standards are designed to improve the ability of the banking sector to absorb shocks through better risk management under the guise of enhanced governance and enhanced transparency.

At the theoretical and methodological basis of this paper, were the works and researches of the foreign and Romanian economists.

As an informational basis there were used specific acts and norms of the National Bank of Romania as well as data from various specialized magazines.

The research methods used for the elaboration of this paper were: Retrospective analysis (historical), diachronic analysis (changes over time), normative method, induction and deduction, synthesis and comparison method, functional approach and others.

The scientific novelty consists in deepening and developing the bank risk management in the Basel III vision.

II. The definition and classification of risks in national and international literature

In the Concise Oxford English Dictionary, the risk is defined as a "hazard, possibility of a negative consequence, loss or exposure to a failure."[1]

In a very broad sense, often used in the literature , risk is defined as the probability of occurrence of events with negative repercussions on a business, activities, etc., that is, events that, if produced, would generate losses, economic-financial damage, and an unforeseeable extra expense or would result in the partial or full loss of the expected result.[2] The risk is treated differently in reference works in the country and abroad.

Through the concept of risk, Aurel Giurgiu understands the "probability of an unwanted event."[3]

[1] Concise Oxford English Dictionary, Fifth Edition, 1995

[2] Constantinescu, A., *History, Performance and Risk Management in Credit Institutions - Application to Cooperative Bank Unirea Brașov*, PhD Thesis abstract (Sibiu, 2014).

[3] Giurgiu, A., I., *Financial Mechanism of the Entrepreneur* (Cluj-Napoca: Dacia, 1995).

Maria Mihalciuc and colleagues[4] think that the term "risk in economic activity" means a "wide range of uncertainties regarding the future activity of an economic agent."

Some French authors[5] appreciate that risk is "an element of uncertainty that may affect the activity of an agent or the conduct of an economic operation."

The notion of risk is meaningful only when the future is presented and when estimating possible fluctuations in the rate of profitability in the foreseeable analyzes.

Through risk analysis, Richard Koch,[6] understands a systematic analysis of any business risk; For example, the risk of doing business with a new client, entering a new market or making a big investment.

International Accounting Standards consider that the risk describes the variety of the results obtained. Risk adjustment may involve increasing the value at which a debt is estimated. In the assessment of outcomes and expenditures affected by uncertainty, the prudence principle should be applied, not to overestimate assets and undervalue debts. However, the elements of uncertainty do not justify the creation of excessive provisions or the understatement of obligations. The following characteristics of the risk are presented:

- risk is a range of uncertainties;
- risk is a remuneration of the invested capital;
- the risk expresses the inability to adapt the company to environmental conditions;
- risk means the probability of an unwanted event occurring; the risk is a measure of the vulnerability of the firm;
- risk expresses the variability of the result under the pressure of the environment;
- risk is a measure of the likelihood of success or failure;
- risk is a concept hard to define by economists and investors;
- risk is meaningless only when it comes to estimating possible;
- risk is meaningless only when attempting to estimate possible fluctuations in the rate of profitability in the forecast analysis;
- risk analysis means a systematic analysis of any business risk.

By analyzing these definitions, some common features, some common features of risk definition can be observed. First of all, it can be said that the risk derives from uncertainty, meaning that the decision is being adopted at present, and the results will occur in the future. The uncertainty comes from not knowing the occurrence of an event and the real effects and magnitude of the occurrence of this event. Secondly, the risk refers to a potential loss, generated by the opposite way of action of a known or unknown factor.

An integrated banking risk management system involves the existence and functionality of policies, procedures and instruments designed to identify, assess and eliminate/ undertake the risks to which the banking institution is exposed.[7]

With the expansion of traditional credit systems at the national and international level, financial markets have become more fragile, the degree of uncertainty has increased, all with the support of multiplying the risks specific to the financial and banking system. Experience has shown that a large part of the main problems faced by banking companies are due to the risk. This is explained by the fact that the future evolution of the asset value as well as

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[4] Mihalciuc, M., *Poliglot explicative dictionary. Temporary terms in the market economy* (Bucharest: Editura Enciclopedică, 1995).

[5] Bernard, Y., & Colli, J.,C., *Economical and financial vocabulary*, (Bucharest: Humanitas, 2000).

[6] Koch, R., *Finance Dictionary* (Bucharest: Teora, 2001).

[7] BCBS, Basel Committee on Banking Supervision, 2003.

the cost of liabilities cannot be accurately predicted, depending on factors such as inflation, monetary policy, changes in the structure of the gross national product.

There are a set of specific operations and procedures generating bank risk. In addition, banks have to deal with non-specific risks.

A number of theories have emerged as to the underlying causes of the problems faced by banks. Some consider that the risks depend on changes in the level of revenue forecasted and the level of expenditure covered by them. The main sources of income consist of the interest on the placements made, and the bulk of the expenses are for the interest to the attracted funds. Both revenue and expenditure can be estimated according to the structure of assets and liabilities, the operations performed and the macroeconomic factors. Other theories set the main role of macroeconomic factors, whose variations are harder to predict.

In conclusion, the most frequent cause of the loss and insolvency of financial institutions (meaning that it is incapable of paying its debt at maturity) is due to the difficulty of dealing with events that can occur but have not been foreseen.

A systematic approach to the main risk categories specific to the financial and banking sector requires their classification. Several variants of banking risk classification can be found in the economic literature. In the following we will refer to the most important of these. The diversity of the risks that a financial-banking institution may face in its day-to-day business, as well as the diversity of situations that lead to these risks make it impossible to classify them uniquely. "Without an exhaustive classification, it can be considered that the main categories of recognized risks are as follows:[8]

1.1. Depending on the market that causes the risk, two categories of risk are distinguished:

A. Risks from the product market;
B. Risks from the capital market.

A. Risks driven by the product market refer to the strategic and operational aspects of the management of operating revenues and expenditures. This category includes:

- credit risk. It is the most important risk on the market, due to the depreciation of the debtor's assets as a consequence of the bankruptcy or impossibility of repaying the loan;
- strategy (business) risk. It is the risk that the whole business will be eliminated from the market due to competition or moral wear, which leads to the impossibility of repaying credits;
- the risk due to banking regulations. Financial-banking institutions operate on the basis of authorizations that can be withdrawn, which can lead to the loss of important investments; Central bank regulations may also lead to small or non-viable banks leaving the market;
- operating risk. It is a significant risk on the product market, and cannot be ignored by any financial and banking institution and involves the risk that the computing systems may not work properly;
- freight risk. Commodity prices directly affect participants in real transactions, and if they are customers of banks, the effects are translated even on them, as well as other lenders, with a general impact on both savings and borrowers;
- the risk of human resources. It is the most subtle, very difficult form of risk that results from personnel policy: recruitment, training, motivation and maintenance of specialists;

[8] Niţu, I., *Banking risk management* (Bucharest: Expert Publishing House, 2000).

- legal risk. It is caused by creditors' responsibility and possible litigation;
- product risk. This refers to the high risk that products offered by a financial-banking institution will wear out and become uncompetitive.

B. Capital Market Risks. Generally, capital markets and their risks affect value for all companies, but significant are financial-banking institutions, where it is difficult to make a clear distinction between the risk of the product market and the capital market. From the capital market point of view, there are the following types of risk:

- interest rate risk. It is the sensitivity of cash flow to changes in interest rates;
- liquidity risk. It is the most important risk of the capital market and consists in the fact that a financial-banking institution does not have adequate liquidity to cover with financial obligations at a given moment;
- settlement risk. It is a particular form of the risk of error, involving the involvement of competitors of the financial-banking institution and refers to the transfer of funds between local and international institutions.

1.2. Depending on the exposure to risk, the risks of the financial-banking institutions can be divided into:

A. Pure risks;
B. Lucrative (speculative) risks.

Depending on the assessment of the degree of risk associated with financial instruments, whether or not recognized in the balance sheet, financial risks may be:

- price risk;
- credit risk;
- liquidity risk;
- cash flow risk.

The price risk incorporates not only the potential for loss but also the gain potential and is grouped into three categories, namely:

- currency risk;
- interest rate risk;
- market risk.

The price risk is the risk that may arise in import-export contracts where partners enter the prices resulting from the negotiations. When, until the payment of the value of the goods/services by the buyer (importer), the prices of those goods on the international market change, it does not affect the transaction but may generate a "loss" or "gain" for the seller or buyer In relation to the market day price.

Currency risk is the risk that the value of a financial instrument fluctuates due to changes in the market rate of the foreign exchange rate.

The risk of interest increases the risk that the value of a financial instrument fluctuates due to changes in the market rate of the interest rate.

Market risk is the risk that the value of a financial instrument fluctuates as a result of changes in market prices, even if these changes are due to factors specific to individual securities or to their issuer, or factors affecting all the securities traded on the market.

Banking risks are phenomena that can occur and generate certain implications for banking activity. They can take several forms:

- the risk of capital loss (insolvency) expresses the extent to which risky assets are covered by capital. Risky assets include high-risk loans (personal credit, loans to which the material guarantee is not satisfactory);
- the liquidity risk resulting from the reporting of sensitive assets (floating rate loans) to sensitive liabilities;
- the risk of interest rate changes for mobilized resources;
- the risk of capital erosion through inflation;
- the risk of repatriation of capital under external lending conditions.

Of these risk categories, the loss of capital and the risk of liquidity are the most important and we will insist on them accordingly.

The risk of capital loss arises if the customer cannot repay the credit granted by the set deadline. In this case, the bank's receivables cannot be converted into liquidity on time and this has repercussions on the bank's ability to pay. If these situations are encountered frequently, the balance between credit repayments and deposit refunds is broken down and these may have negative consequences for the bank. If these situations are reported by depositors, they lose their trust in the bank and withdraw their deposited amounts, so the bank's situation gets worse.

In order to prevent and avoid insolvency, measures are taken at microeconomic level. In this way, in the country, bank operating rules promote the protection of depositors by imposing rules designed to counter the effects of insolvency. These rules are as follows:

- mandatory minimum capital;
- establishing a risk coverage ratio expressed as a ratio between the net own funds and the credits granted, weighted by the degree of risk;
- calculating a risk mitigation rate that limits the size of the credit that can be granted to a single client, depending on the bank's own funds, so that the bankruptcy of one of the clients will not, in essence, harm the bank's balance.

Liquidity risk, or, more precisely, the risk of liquidity. Liquidity is the ability to transform immediately or in a certain amount of time, without loss, the material resources and / or receivables available in liquid market instruments, in cash in cash and in cash. Bank liquidity is the ability of the bank to make payments at any time by transfer or cash at the request of depositary holders. The bank must have sufficient cash availability to make direct payments to customers in cash or customer deposits in favor of other banks (more precisely to companies that have accounts opened with other banks).

The Bank receives, as a result of current operations, automated currency flows as a result of banking services for customers, flows that provide favorable premises for the bank's liquidity, namely:

- through the favorable balance of settlement of interbank payments;
- through cash-settling operations made by customers for their accounts, when they are preponderant to cash-in-demand requests in accounts;
- by the transfer of foreign currency deposits to its accounts by banks or by foreign exchange regulators. In this case, the customer accounts are fed, while the bank records an increase in deposits in the currency.

The bank has to resort to refinancing if these conditions are met. These short-term loans will cost the bank the costs it needs to cover when the bank aims to maximize profit and minimize expenses. The problem of lack of liquidity does not mean that it would not be possible to obtain the liquidity, but its price, of the cost of obtaining these liquidities. It follows that banks must constantly study their liquidity using various processes and are thus able to avoid unjustified cost increases as liquidity is not assured.

In order for the activity of a bank to be profitable, it is necessary to observe three basic conditions, namely:

- providing liquidity;
- safety - annihilation of the risk of inability to pay;
- profitability - a bank carries out a profitable business if the interest on loans granted and other interest income is higher than passive interest rates on loans and other liabilities. These requirements generate conflicts through their interaction. Businesses are risky, so unsafe, and liquidity entails costs, so it's less profitable. The Bank has the task of finding converging points, so that the interaction of these requirements results in a corresponding profit and adequate liquidity. To find these converging points, it is important for the bank to formulate and define general strategies for lending.

Adequate risk management should provide the bank with the ability to identify and assess bank risks, control, eliminate or avoid and finance.

III. Liquidity management in crisis situations

Liquidity is the ability of the Bank to honor its assumed financial obligations and expresses the ability of assets to be converted quickly and with minimum spending in cash (cash or available in the current account). Liquidity is a problem of managing liabilities and assets that have different degrees of conversion to liquid currency.

Inappropriate liquidity can lead to the need to attract additional resources at high costs, reducing profitability and, ultimately, leading to the impossibility of meeting payment obligations. At the same time, excessive liquidity diminishes the return on assets, leading to poor financial performance.

Maintaining adequate liquidity is the primary task of the bank's management and depends on the full estimation and coverage of liquidity needs and the way the market perceives the bank's financial condition.

Liquidity risk is the most significant risk of the bank being that the bank does not have an adequate level of liquidity to cover financial obligations at a given time. The liquidity risk is highest when the bank can not anticipate the demand for new loans or withdrawals of deposits and when it does not have access to new sources of cash.

The liquidity risk arises from the bank's inability to cope with the decrease in sources or the increased need for financing investments. If an entity has inadequate liquidity, it can not obtain the necessary sources by increasing liabilities or by promptly converting assets into cash at a reasonable cost that does not affect profitability. In extreme cases, the lack of liquidity can lead to the insolvency of a unit.

In order to ensure the liquidity needs, both assets and liabilities can be used. The liquidity tradable source is the liquid assets. To meet liquidity requirements, some banks have assets that can be immediately alienated, close to face value.

Liabilities can also be converted into liquidity, meaning that debt securities can easily be issued to obtain cash at reasonable costs. If the bank needs cash, either sell assets or raise loans.

Liquidity risk management strategy and policy

The definition and implementation of the liquidity strategy aims to maintain a liquidity level adequate to the activity of each Credit Institution, provided the necessary resources are provided to support the budget provisions (business plan) and the programmed growth of the loan portfolio.

To achieve this, the Bank considers the following operational objectives:

General Objectives:

- effective management of reputational risk and proper bank development in order to reach their customers;
- appointing a bank manager to coordinate activities in the liquidity field;
- the bank's performance of a liquidity indicator value greater than 1 per maturity band, calculated in accordance with the Bank's operating procedure;
- the bank's immediate liquidity indicator should be above 25%;
- ensure holding or accessing a liquidity reserve to enable the Bank to continue its business on short, medium and long-term horizons under crisis scenarios, as well as providing the ability to generate liquidity in the future either by adjusting the business or by applying measures more radical. These assurances are, in fact, the counterbalance capacity of the Bank;
- the liquidity reserve held or accessible by the Bank will be correlated with the results of its own crisis scenarios;
- the liquidity reserve that is owned or can be accessed by the bank will be correlated with the results of the crisis scenarios analyzed at the Bank level;

Intraday liquidity management objectives:

Daily monitoring by the Accounting Department and Bank Leaders Responsible for Treasury Cash Flow Activity taking into account the following:

- maturity of deposits placed / attracted to non-bank clients, financial institutions and credit institutions;
- inputs / outputs for non-cash transactions of customers or in their own name;
- inputs / outputs of cash transactions;
- loan entries / exits;
- the level of minimum reserves;
- correlation of liquidity outflows with the intraday objectives of the bank;

Forecasting potential net funding deficits that may occur at different times during a day. In this regard, the bank will ensure that it is ready to cope with unexpected disruptions of intraday liquidity flows, including by setting out predefined actions in alternative liquidity risk plans.

Short-term liquidity management objectives:

- the short-term liquidity risk will be covered by the liquidity reserve that is part of the counterbalance capacity;
- the size of the Bank's liquidity reserve will correlate with the established risk tolerance.

Medium and long-term liquidity management objectives:

- optimizing the cost-risk-profit ratio both at the level of each bank and at the level of the The bank office
- giving mature credits in a better match with the real maturity of sources and diversifying credit products to ensure a growth in the loan portfolio by at least 1%;

- increasing the attracted sources from non-bank customers by introducing new high-yield savings products for medium and long-term, which will benefit from competitive interest and adequate promotion;
- diversify sources of funds and their maturity to lead both to avoid dependence on certain clients and to reduce the risk of loss of important resources in a very short time and to reduce exposure to liquidity risk. In this respect, the objectives related to the diversification of financing sources will be part of the medium and long-term financing plans and will be correlated with the Bank's budget and the processes of planning their activities.
- determining the volatility of the sources according to their real and not the legal chargeability, as well as the structure of the clients and the knowledge of their behavioral particularities.

Since the liquidity of the Bank can be ensured by short-term liquid assets or the interbank market (by buying cash from other banks), two methods of measuring liquidity are needed. (immediate liquidity and LCR).

Measuring liquidity provided by liquid assets does not imply taking into account the confidence factor.

Immediate liquidity risk: means the impossibility of coping with a massive and unexpected withdrawal from clients and the impossibility of replacing them with other sources (this risk occurs in the event of a bank crisis or market liquidity crisis);

The particular importance of avoiding liquidity risk, the fact that the entity must always have the ability to deal at any time with the financial commitments assumed or by extension, the ability to quickly mobilize available assets, that is to turn them into money, lead to a special attention from the members of the risk management committee in order to keep this indicator within reasonable limits, the inappropriate level of which could cause significant risk generating elements. The liquidity risk arises from the impossibility of banks to honor the short-term payment obligations at any time, with the probability of incurring unacceptable losses or of not realizing the estimated profits.

Events that signal the emergence of liquidity crises are:

- unusual withdrawals of deposits by bank customers;
- there are difficulties in renewing sources of funding or attracting new funds;
- higher interest rates are required to maintain deposits and attract other funds;
- bank begins to report low income margins;
- local or national press publishes articles on the difficulties of the financial system in attracting funds.

Crisis situations are prevented according to the liquidity procedure in force, Having the responsibility of the chief accountant of the bank. The responsibilities of the management body are regulated in the Organization and Operation Regulations. Liquidity management responsibilities are divided into several organizational structures, namely Accounting, Operations, Settlements, Risk Management Division, Risk Management Committee. These responsibilities are described in the working procedures of each organizational structure as well as in the Organization and Operation Regulations.

IV. Conclusions

Risk management within financial institutions is under the influence of major changes caused by the current financial crisis. So, what can we learn from recent financial crises and their causes? The parties that have the most to learn are: governments, central banks, stock exchanges and investors. Governments have already become aware that the best solution for curbing the financial crisis is the policy of maintaining interest rate flexibility. The ability to raise interest rates to prevent financial crises is a key element in the global financial environment. At the same time, the interest rate cut should be applied immediately after a financial crisis, in order to give the economy a boost.

Governments need to ensure that accounting standards and prudential and risk laws have a solid foundation. Central banks need to develop a more observable capacity to monitor the diversity of international economic instruments in line with national interests. All in all, central banks need to be proactive and anticipate the following segments of the financial crisis for an efficient and timely resolution.

In recent years, the Banking Supervision Committee has expressed the importance of improving the Basel II Accord, as the current directives do not fully cover the adequacy of banking risks.

Nowadays, we are facing a long period of global financial sector transformation aimed mainly at:

- its business model;
- regulatory and supervisory framework;
- reporting and accounting framework;
- corporate governance rules;
- the capital adequacy framework, etc.

The measures proposed by specialists and under implementation in the coming years are elements of the most important reforms of the world financial system after Bretton Woods. Credit institutions must adopt significant risk management policies to implement the chosen risk profile. Respective policies must be consistent with general strategies, be correlated with the level of credit institution's own funds and their experience in risk management, and with the availability of risk exposure set by the board of directors. Significant risk management policies consistent with the nature, size and complexity of credit institutions' activities need to be transposed clearly and transparently into internal rules, procedures, including manuals and codes of conduct.

These significant risk management policies should, as appropriate, ensure the following:

- establish at least a system of procedures for authorizing the operations affected by the respective risks;
- designing a system for setting risk exposure limits and monitoring them, reflecting the chosen risk profile and complying with legislation and regulations;
- limits set at the level of activities and / or compartments / headquarters must be correlated with those established at the overall level of credit institutions;
- establishment of a system of reporting of exposures to risks and other risks related to the appropriate levels of management;
- establishment of a system of procedures for unforeseen situations;
- establishing recruitment and remuneration criteria for staff to set high standards for training, experience and integrity.

Also, given that operational risk events can occur at all activities of the bank and its products or services, the management of the territorial banking units and functional entities in the central bank administration must create the necessary conditions in order for it to ensure the notification of operational risk events produced at their level.

In order to assess exposure to events with a major negative impact, the credit institution should use, in combination with external data, scenario analyzes based on expert opinions. Given the current economic situation and the decisions taken by the supervising bank on the management of operational risk, the evaluations should be validated and revised over time by comparing with the effectively recorded losses in order to ensure their veracity.

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