

THE STATUS OF LIQUIDITY MANAGEMENT SYSTEMS IN UKRAINIAN BANKS

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Ivasiv I. B., Fuksman O. Yu.

The Status of Liquidity Management Systems in Ukrainian Banks

The objective of the article consists in studying the status of principal elements of liquidity management systems in domestic banks. Basic liquidity management strategies of banks were analyzed, the necessity of implementing an integrated liquidity management system was stressed. Key properties and elements of an integrated liquidity management system were identified. By using a questionnaire survey method, the current status of the liquidity management system in Ukrainian banks was analyzed in terms of correspondence of its elements to the characteristics of an integrated one; its principal flaws were identified. The necessity of equal attention paid by the management to the liquidity risk and the credit risk was substantiated. The prospects for further research in this field consist in analysis of the identified flaws of the liquidity management systems in banks and development of recommendations for their elimination, in particular: involvement of front-office representatives into active participation in liquidity management; introduction of an algorithm for calculation of a stimulating liquidity premium within the transfer model in order to achieve more efficient liquidity management by using transfer pricing; improvement of the information support of liquidity management by developing new reporting and analytical forms, etc.

Key words: liquidity, liquidity management system, asset management, liability management, balanced approach

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Ivasiv Ihor B. – Doctor of Science (Economics), Professor, Professor, Department of Banking, Kyiv National Economic University named after. V. Getman (pr. Peremogy, 54/1, Kyiv, 03068, Ukraine)

Email: iivasiv@kneu.edu.ua

Fuksman Oleksandr Yu. – Postgraduate Student, Kyiv National University of Trade and Economy (vul. Kioto, 19, Kyiv, 02156, Ukraine)

Email: afuksman@yandex.ru

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Ивасив И. Б., Фуксман А. Ю. Состояние систем управления ликвидностью в банках Украины

Целью статьи является исследование состояния основных элементов систем управления ликвидностью в отечественных банках. Были проанализированы основные стратегии управления ликвидностью в банках и отмечена необходимость внедрения интегрированной системы управления ликвидностью. Определены ключевые признаки и элементы интегрированной системы управления ликвидностью. При помощи метода анкетирования проведен анализ существующего на сегодня состояния системы управления ликвидностью в банках Украины в разрезе ее элементов относительно соответствия признакам интегрированной, а также установлены ключевые недостатки. Доказано, что менеджерам банка необходимо уделять риску ликвидности не меньше внимания, чем кредитному риску. Перспективами дальнейших исследований в данном направлении являются проведение анализа определенных в статье недостатков в системах управления ликвидностью в банках и разработка рекомендаций относительно их устранения, а именно: вовлечение представителей фронт-офиса в процесс активного управления ликвидностью; внедрение алгоритма расчета стимулирующей премии ликвидности в трансфертной модели с целью более качественного управления ликвидностью при помощи трансфертного ценообразования; усовершенствование информационной поддержки управления ликвидностью в направлении разработки новых отчетных и аналитических форм и т. д.

Ключевые слова: ликвидность, система управления ликвидностью, управление активами, управление пассивами, сбалансированный подход

Tabl.: 2. **Библ.:** 8.

Ивасив Игорь Богданович – доктор экономических наук, профессор, профессор, кафедра банковского дела, Киевский национальный экономический университет им. В. Гетьмана (пр. Победы, 54/1, Киев, 03068, Украина)

Email: iivasiv@kneu.edu.ua

Фуксман Александр Юрьевич – аспирант, Киевский национальный торгово-экономический университет (ул. Киото, 19, Киев, 02156, Украина)

Email: afuksman@yandex.ru

Ivasiv I. B., Fuksman O. Yu. Stan sistem upravlinnia likvidnistiu v bankah Ukraini

Метою статті є дослідження стану основних елементів систем управління ліквідністю у вітчизняних банках. Було проаналізовано основні стратегії управління ліквідністю у банках та зазначено необхідність запровадження у використання інтегрованої системи управління ліквідністю. Визначено основні ключові ознаки та елементи інтегрованої системи управління ліквідністю. За допомогою методу анкетування проведено аналіз наявного стану системи управління ліквідністю в банках України у розрізі її елементів щодо відповідності ознакам інтегрованої та встановлено ключові недоліки. Доведено необхідність приділення ризику ліквідності не меншої уваги з боку менеджерів банку, ніж кредитному ризику. Перспективами подальших досліджень у даному напрямі є проведення аналізу виявлених недоліків у системах управління ліквідністю в банках і розробка рекомендацій щодо їх усунення, зокрема: залучення представників фронт-офісу до активного управління ліквідністю; впровадження алгоритму розрахунку стимулюючої премії ліквідності у трансфертній моделі з метою більш якісного управління ліквідністю за допомогою трансфертного ціноутворення; вдосконалення інформаційної підтримки управління ліквідністю у напрямку розробки нових звітних та аналітичних форм тощо.

Ключові слова: ліквідність, система управління ліквідністю, управління активами, управління пасивами, збалансований підхід

Tabl.: 2. **Бібл.:** 8.

Ivasiv Igor Bogdanovich – доктор економічних наук, професор, професор, кафедра банківської справи, Київський національний економічний університет ім. В. Гетьмана (пр. Перемоги, 54/1, Київ, 03068, Україна)

Email: iivasiv@kneu.edu.ua

Fuksman Oleksandr Yuriyovich – аспірант, Київський національний торговельно-економічний університет (вул. Киото, 19, Київ, 02156, Україна)

Email: afuksman@yandex.ru

Introduction. Profound socio-political upheavals that Ukraine witnessed in early 2014 have resulted in significant deterioration in the country's economic situation, having catalyzed the imbalances that have been gradually accumulating since Ukraine gained its independence. As a consequence, the leaders of the country are currently facing a series of challenges which require, among other measures, implementation of a series of economic reforms. These reforms are directly connected with ensuring stability of the banking system which is fundamental to sustainable economic development.

One of basic preconditions for stability of the banking system is its liquidity. Correspondingly, the mission of the central regulatory bodies at the macro-level consists in carrying out efficient management of liquidity of the banking system and encouraging banks to improve internal liquidity management systems. At the micro-level, a crucial task for each bank is construction of a modern liquidity management system which is fully consistent with the current needs. For this reason, studying the characteristics of the current liquidity management systems in banks, identifying their basic flaws, and taking steps aimed at their elimination appear relevant.

Analysis of recent studies and published works. Evolution of liquidity management strategies of banks is the focus of research works by A. Faliuta, O. Kyrychenko, V. Aliokhina, T. Bondarenko and others [1 – 3]. Research findings concerning formation of an integrated system of liquidity management or asset-liability management are presented in works by Yu. Serpeninova, Zh. Dovhan, O. Kryklii, etc. [4; 5; 6]. Simultaneously, it should be noted that the systemic aspect of construction of an integrated liquidity management system has not received sufficient attention in the scientific community; therefore, this question needs further discussion.

The **objective** of the article consists in studying the status of basic elements of liquidity management systems in domestic banks and identifying the main flaws of the corresponding systems.

Research results. The choice of one liquidity management strategy or another has been primarily influenced by the historic environment of functioning of banks and their competitiveness on the financial services market. Thus, it is possible to single out three principal liquidity management strategies of banks:

- the asset management strategy which implies that the main task of the bank management is formation of an optimum asset structure which will allow the bank to carry out all necessary payments in a timely manner and to the full extent; correspondingly, liquidity needs are mainly met by maintaining a significant volume of readily obtainable assets in the form of cash and correspondent account balances in the central bank and counterparty banks, forming a portfolio of government securities that can be used as secondary liquidity reserves, as well as through efficient loan portfolio management [2, p.64];
- the liability management strategy which implies that the bank is capable of maintaining an adequate level of its liquidity owing to energetic efforts in customer relations aimed at attracting the required volume of monetary resources accepted for reasonable periods and at a favorable rate, domestic interbank money

market borrowings and international capital market borrowings [2, p. 81 – 84];

- the balanced strategy of integrated asset-liability management which implies the necessity of analyzing bank resources and their uses in their inextricable connection by employing simulation modeling methods, maturity gap analysis and a probabilistic approach [3].

The principal distinctive feature and advantage of the third strategy in comparison with the first two, in our opinion, lies in understanding of the fact that both active and passive banking operations can generate profits and losses for the bank. However, as A. Faliuta reasonably mentions in his article, these strategies are not «management strategies» to the full extent, as management is a significantly wider aspect. The above strategies only regulate liquidity, thus it appears inappropriate to refer them the «management» category, as the scope of their operation is considerably narrower [1].

In our view, to be competitive on the financial market today, it is not enough for banks to carry out balanced liquidity regulation through formation of an optimum balance structure, as proposed by Zh. Dovhan [5]. Liquidity regulation through implementation of crisis management [6] or employment of mathematical tools via the optimization model mechanism [4] also provide only partial solutions to the problem of effectiveness of the corresponding process. It is necessary that banks introduce fundamental changes specifically to the liquidity management process with a view to constructing a brand new – integrated – system which will allow achieving key objectives and meeting the needs of shareholders and customers of the bank. The principal elements of such an integrated liquidity management system (further referred to as ILMS) should be: organizational, methodological, information and analytical support, and internal control. We believe the key ILMS principles to be as follows:

- establishment of responsibility of the senior management of the bank for the efficiency of liquidity management system functioning and introduction of the team decision rule in questions concerning the appropriateness of the bank's acceptance of a liquidity risk;
- formation of an organizational culture of liquidity management which implies involvement of both the supervisory board and bank directors and managers of any level (including corporate business employees) into liquidity management, as well as clear distribution of authority among divisions of front, back, and middle offices;
- creation of an adequate liquidity management infrastructure (powerful analytics software and information support, adequate organizational and financial structure, an appropriate internal control system);
- appropriate training of the staff, which should be suitable for the competitive environment of the bank functioning;
- determination of the VaR value for liquidity on a permanent basis with a view to estimation of maximum foreseeable losses of the capital caused by a liquidity risk occurrence;
- active use of the transfer pricing system in the liquidity management process [7].

In order to assess the current status of the liquidity management system in Ukrainian banks and its correspondence to the characteristics of an integrated one, we developed a questionnaire to be completed by employees of domestic banks that are on the list of top 20 banks of Ukraine according to the NBU classification as of 1 October 2014 [8]. Overall, the survey involved 8 banking establishments, four of which have the foreign capital of over 50% (further referred to as foreign-capital banks), whereas the capital of the remaining four banks is predominantly represented by resources of domestic legal entities and private individuals (further referred to as domestic-capital banks).

Based on the respondents' answers, conclusions were drawn as to the level of current organizational, methodological, information and analytical support, as well as the status of the internal control system with a view to assessing the degree of correspondence of the liquidity management systems in domestic- and foreign-capital banks to the characteristics of an integrated one. Summative tables presented in the final section of the article were obtained on the basis of a developed assessment criterion applied to answers to each of the proposed questions.

As to the organizational ILMS support, it should be noted that the results of the survey suggest that in domestic-capital banks this element appears to be operating less smoothly compared with foreign-capital banks. First of all, this can be attributed to the risk controlling divisions being mostly absent in the former, whereas respondents representing three of the four foreign-capital banks indicated the existence of a corresponding division in the organizational structure. We believe that alongside risk management, there must be an individual structure in the ILMS whose principal function is provision of information and methodological support for the liquidity risk management system and control of the corresponding process. We consider the idea of overlapping functions of a risk manager and risk controller to be erroneous. Within the ILMS framework, the mission of the latter consists in creation of appropriate conditions for the risk management functioning, namely: analysis of factors that influence liquidity, development of a calculation algorithm for limits and control over adherence to them. A risk manager, in turn, must continuously analyze the degree of exposure of the bank to a liquidity risk through stress testing and calculation of the fixed limits and report the results to a risk controller. Thus, constant exchange of information between corresponding participants in the ILMS makes it efficient, whereas assigning all responsibilities to risk managers can result in lower quality of liquidity risk management, especially in the absence of due control.

Respondents from all the banks indicated that end-to-end liquidity management which implies that each employee must be directly or indirectly involved in the process functions with certain limitations. Those mentioned most frequently are presented below:

- a manager often performs a task set by the superiors without clear understanding of which process he/she participates in and what his/her role is, which not infrequently results in poor task performance due to absence of sufficient motivation of the performer.
- not all employees realize the necessity of carrying out liquidity management paying due attention to credit

and interest-rate risks, which can result in accumulation of negative trends and lack of balance in the volumes of attracted and placed resources with varying maturity;

- corporate employees are passive participants in the liquidity management process.

It should be noted that most researchers do not single out corporate and retail businesses as components of a liquidity management system of a bank. Virtual absence of front office representatives from the process of active liquidity management is evidenced by both the above limitation and the answers of respondents from all the surveyed banks to the question concerning corporate and retail business employees' realization of their role in the liquidity management system. For instance, according to the survey, in seven of the eight banks, front office managers feel that their participation in the liquidity management process is limited to the necessity of fulfilling plans on attracting/placing resources, whereas the necessity of maintaining permanent contact with the treasury is ignored completely or partially.

Thus, the organizational support of liquidity management in domestic banks, regardless of the origin of their capital, requires significant improvement, first of all in terms of integration of employees' operations and their alignment with specific objectives within the framework of an integrated liquidity management system.

The results of the survey suggest that the methodological support of liquidity management systems in Ukrainian banks maintains a high standard both in domestic- and foreign-capital banks.

It also appears important to mention that in each of the surveyed banks, stress- and backtesting policies have been developed, there are also short-, medium-, and long-term liquidity management strategies put into practice. However, it is noteworthy that the indicated time periods somewhat vary in duration. In most banks, a short-term period lasts 1 month, a period of up to 1 year (sometimes six months) is regarded as a medium-term time period, and a period of 3 years is considered to be long-term. In our view, this artificial shortening of time frames is primarily conditioned by a significant increase in the degree of volatility of both the domestic and international markets caused by the political and the resultant socio-economic instability in the country. Respondents from only two of the eight surveyed banks indicated that they employ the standard time division (short-term period – up to 1 year, medium-term period – up to 3 years, long-term period – 3–10 years), yet a separate current liquidity management strategy is singled out for the time periods of a week, month, and a quarter.

The survey also helped establish that in three of the four surveyed domestic-capital banks no methods for analysis of seasonal trends in flows of funds for the future periods are available, which significantly complicates the process of liquidity gap planning within varying time frames. Besides, enhancement of the methodological support of the ILMS also requires paying significant attention to the question of development and implementation of a methodology for control and periodical testing of information systems used in the process of liquidity management in order to ensure their smooth operation (as they are absent in two domestic-capital banks and one foreign-capital banks).

The information and analytical support of liquidity management systems in Ukrainian banks is in general at a high level, yet it requires improvement in individual aspects as well.

For instance, all the analyzed banks utilize the «value at risk» tool in order to estimate potential losses caused by a liquidity risk occurrence. At the same time, seven banks have a mechanism for computing an integrated VaR for liquidity taking into account the currency and interest components that is used on a regular basis.

This approach allows taking into consideration correlations between individual types of risks by constructing a correlation matrix which permits calculating an integrated value of potential losses of the bank caused by a liquidity risk occurrence in conjunction with the effect of other associated risk groups. The first step in this mechanism is calculation of individual “value at risk” values. The key risk factors in computing the VaR for liquidity are the sign and size of the gap, as well as interest rate trends (“overnight” bank-to-bank rates are normally used). The mechanisms of currency and interest VaR computation are similar, the difference being that currency and interest rates correspondingly are used as risk factors. An integral VaR value is further calculated using a correlation matrix of interconnections between the risks (either developed by the bank or informed by standard data recommended by the Basel Committee).

It should be noted that respondents from one of the banks indicated that while analyzing exposure of the bank to risks, the liquidity VaR is calculated separately from the market VaR which includes, in particular, the interest-rate and currency risks, without computing an integrated value.

The frequency of analysis of the factors that influence the liquidity of the bank is directly connected with its readiness to withstand the internal and external destabilizing factors which affect the liquid strength of the bank. The survey results suggest that the foreign-capital banks run analysis of the factors influencing liquidity more frequently (the respondents mostly indicated one-month intervals) than in domestic-capital banks.

However, none of the surveyed banks have developed a matrix for zones of factor indices that allows constructing a scale describing the influence of the factors on liquidity of the bank with a view to controlling them in future. One of the advantages of such a matrix is determination of not only the degree to which each of the studied factors influences liquidity, but also the strength of the connection uniting them. In our opinion, this approach permits forming an algorithm for more efficient distribution of factors according to the scope of influence produced and developing an individual set of measures to control the influence of the factors on liquidity.

Respondents from six banking establishments participating in the survey noted that their banks utilize the transfer pricing system to manage the liquidity risk. It is noteworthy that the remaining two banks also have a financial structure and a transfer rate system at their disposal, yet the management views the transfer model as a key tool in interest-rate risk management. As a rule, transfer models of banks generally include the following elements:

- corporate banking business line;
- business line encompassing banking solutions for small and medium-sized enterprises;
- retail banking business line;

- business line encompassing banking solutions for investment and treasury operations;
- business line encompassing the assets and liabilities of the bank that do not generate any interest return;
- ALM (Asset-Liability Management).

ALM operations are of dual nature. On the one hand, the management, using corresponding transfer prices, “nominally” sells to profit centers the resources placed among their customers in the form of loans and, correspondingly, “nominally” buys from the profit centers the resources attracted from their customers in the form of deposits. On the other hand, the ALM carries out open-market operations pertaining to liquidity risk and market risk management, in particular attraction and placement of corresponding funding volumes on the market.

The mechanisms of transfer price calculation are also similar in most of the surveyed banks and include the following components as a minimum: the reference rate, liquidity premium, country risk premium (for the foreign-capital banks), and other costs.

The reference rate is the basic component of the transfer price and is included into its calculation formula while determining a transfer rate for any asset/liability of the bank. The reference rate value depends on the asset/liability type, the currency it is denominated in, and maturity (in particular, KyivPrime rates are used, as well as yields on domestic government loan bonds (DGLB), Libor and Euribor rates).

The country risk premium is additional compensation required by parent companies of their Ukraine-based subsidiaries for carrying out transactions in currencies other than the national one. For this reason, this component is included into transfer pricing formulas used for assets/liabilities denominated in all foreign currencies, regardless of the profit centers they are assigned to or product types assigned to them.

As a rule, other costs include the reserve requirement ratio which is fixed by the National Bank of Ukraine and increases the cost of funds attracted by the bank. Inclusion of this component into the formula for calculation of the transfer price of a liability depends on the product type assigned to this liability and the type of currency it is denominated in, whereas the level of a specific value is determined by the maturity of a liability.

The survey results demonstrated that seven of the surveyed banks have no clearly defined algorithm for determination of the liquidity premium in the transfer rate which should stimulate or destimulate attraction / placement of funds for a certain period. Thus, this component which is essentially a liquidity management tool is primarily estimated by using the method of expert assessment with reliance on changes in the Ukrainian banking market environment and without mathematical connection with various financial indices. We therefore believe that this aspect requires significant improvement.

It should also be noted that only one bank (a foreign-capital bank) utilizes special software for liquidity management, whereas most of the banking establishments predominantly use the tools offered by MS Excel, which imposes limitations on technical functionality of research and prediction calculations.

Overall, the internal control system operates at a sufficiently high level and meets the ILMS requirements in most of the surveyed banks. For instance, six banks have internal control divisions which deal with independent assessment of

the liquidity management system and are subordinated to the directors. Alongside the internal control division, these banks also have internal audit services subordinated to the supervisory board. The key function of the internal audit service is expert evaluation of internal control employees' operations and reporting the results to shareholders of the bank. At the same time, two banks (one being a domestic-capital bank, the other being a foreign-capital bank) have no internal control divisions. Analysis of efficiency of the liquidity management system and drawing corresponding conclusions are the responsibility of the internal audit service subordinated to the directors. In our view, this approach is flawed, as in this case one element of the ILMS is missing which links internal control of the liquidity management system with the bank shareholders.

Summative tables 1 and 2 demonstrate the results of the conducted analysis of the status of liquidity management systems in domestic- and foreign-capital banks. The names of the banks are omitted for the reason of maintaining banking secrecy. Percentages showing evaluation results for individual ILMS elements were calculated on the basis of the number of points "scored" by the bank and the overall possible number of points in each block of questions. The integral percentage describing efficiency of the constructed liquidity management system is 70.47% for the domestic-capital banks and 77.37% for the foreign-capital banks. The latter suggests a somewhat better status of liquidity management systems in foreign-capital banks.

Table 1

Summative Analysis of the Status of Liquidity Management Systems in Domestic-Capital Banks

Bank	Organizational support		Methodological support		Information and analytical support		Internal control	
	Score	%	Score	%	Score	%	Score	%
A	3.50	70.00	3.50	70.00	11.00	78.57	4.00	100.00
B	2.00	40.00	3.50	70.00	7.50	53.57	4.00	100.00
C	2.50	50.00	5.00	100.00	9.00	64.29	1.00	25.00
D	2.50	50.00	4.50	90.00	9.25	66.07	4.00	100.00
Total	2.63	52.50	4.13	82.50	9.19	65.63	3.25	81.25

Table 2

Summative Analysis of the Status of Liquidity Management Systems in Foreign-Capital Banks

Bank	Organizational support		Methodological support		Information and analytical support		Internal control	
	Score	%	Score	%	Score	%	Score	%
A	3.50	70.00	5.00	100.00	13.00	92.86	4.00	100.00
B	3.00	60.00	4.00	80.00	9.00	64.29	4.00	100.00
C	2.50	50.00	4.50	90.00	10.00	71.43	4.00	100.00
D	3.50	70.00	5.00	100.00	9.00	64.29	1.00	25.00
Total	3.13	62.50	4.63	92.50	10.25	73.22	3.25	81.25

It should be mentioned that along with the questions which concerned the status of individual elements of the liquidity management system in the banks, the respondents were also asked to answer several more questions, among which the question concerning attention paid to credit and liquidity risks, in our view, is of importance. According to the conducted survey, all the banks tend to focus more on credit risk management than on liquidity risk management. This situation is first of all connected with the belief that the losses incurred by the bank in case of a credit risk occurrence are potentially greater than those incurred in case of a liquidity risk occurrence, which we consider to be erroneous.

Inappropriate credit risk management can result in the bank losing a significant part of its receipts in case of non-repayment of borrowed loan funds by the debtor. This entails

losses for the bank in the current or future period, a decrease in the regulatory capital, and, correspondingly, rates of prudential standards are also negatively affected. However, it should be noted that even in case of a negative outcome in terms of repayment of funds by debtors, the bank will always have a sufficient time period for taking the necessary steps to stabilize the situation, as occurrence of a credit risk has no immediate effect on the financial standing of a bank (certainly, unless all or most customers are in default).

Simultaneously, a liquidity risk occurrence is always linked to another type of risk for the bank, namely reputational. Emergence of issues in payment of funds from customers' accounts, especially those of private individuals, quickly results in panic. This reaction is often a source of substantial outflow of both cash and non-cash funds within a short time period,

which immediately affects the prudential liquidity standards, the financial standing of the bank, and eventually leads to bankruptcy. While loss of reputation serves as a catalyst for destabilizing processes, the problem of time pressure becomes a key factor that frustrates any efforts of the bank management to normalize the situation.

Thus, potential consequences of a liquidity risk occurrence are normally significantly more destructive than those of a credit risk occurrence, which supports the idea that the liquidity risk should be paid no less attention than the credit risk.

Conclusions. Thus, analysis of the status of liquidity management systems in Ukrainian domestic- and foreign-capital banks carried out using the questionnaire survey method allowed identifying a series of flaws, among them:

- passive participation of front-office representatives in the liquidity management process;
- absence of a clear algorithm for determination of the liquidity premium in the transfer rate which should stimulate/destimulate attraction/placement of funds for a certain period;
- absence of special software for liquidity management.
- In our view, elimination of these problems will permit substantial improvement in the liquidity management system of a bank and take this process to a new level of efficiency.

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