NATIONAL BANK OF KAZAKHSTAN

PRUDENTIAL LIQUIDITY REQUIREMENTS AND THE RISK-BASED APPROACH

Department – Center for Research and Analytics

Economic Study No.2022-3
Working Paper

Jussangaliyeva Kamilla
Miller Aliya
Khakimzhanov Sabit

Economic studies and research notes of the National Bank of the Republic of Kazakhstan ("the NBK") are meant to disseminate the outcomes of the NBK's studies as well as of other academic research works of the NBK's staff. Economic studies are disseminated in order to encourage discussions.

Working papers of the NBK's staff reflect in-process studies as at the date of publication and are meant for discussion and receiving comments and remarks. They are not checked or reviewed at the NBK prior to their publishing. Opinions and judgments presented in the paper are only personal opinions and judgments of authors and should not be regarded as those reflecting the view of the NBK, its top management or the members of the Monetary Policy Committee.

Prudential Liquidity Requirements and the Risk-Based Approach

March 2022

NBRK – WP – 2022 – 3

ISSN: 2789-150X

Prudential Liquidity Requirements and the Risk-Based Approach

Jussangaliyeva Kamilla[1]
Miller Aliya[2]
Khakimzhanov Sabit[3]

Abstract

This paper analyzes Kazakhstan's practice of introducing prudential liquidity ratios (LCR and NSFR) recommended by the Basel Committee on Banking Supervision (BCBS). It reviews the compliance of Kazakhstan's ratios with the Basel standards, evaluates the effect of alternative interpretations, discusses the meaningfullness and effectiveness of the standards to reflect funding risks and improve market practices of liquidity management, their interaction with other standards and conditionality of the regulatory and competitive environment.

Key Words: Liquidity and funding risks, Basel III, liquidity coverage ratio and net stable funding ratio (LCR, NSFR)

JEL classification: G01, G21, G28, G32.

[1] Jussangaliyeva Kamilla – Corresponding Author, Chief Specialist-Analyst, Economic Research Division, Department-Center for Research and Analytics kamilla.j@nationalbank.kz

[2] Miller Aliya – at the time of research – Head of the Economic Research Division, Department-Center for Research and Analytics uataeva@mail.ru

[3] Khakimzhanov Sabit – Independent Expert (at the time of research – Director of the Department-Center for Research and Analytics) khakimzhanov@yahoo.com

Contents

1. Preamble

In this paper, we undertake the analysis of a new regime of bank liquidity regulation introduced in line with recommendations from the Basel Committee on Banking Supervision (BCBS) and its interaction with other financial stability frameworks such as the capital requirement and lending of last resort (LLRs).

Liquidity ratios are designed to improve the ability of supervised banks to perform their functions in the face of liquidity shocks caused by unforeseen withdrawals and other forms of fund outflows. Many banks, despite their capital adequacy, turned out to be unable to absorb liquidity shocks, with the risk of transferring the shock to bank customers and escalating a local shock into a systemic liquidity crisis with all that it entails. In these circumstances, central banks are forced to provide liquidity quickly and abundantly, without a risk of discriminating banks based on their level of capital adequacy.

The new Basel liquidity ratios are aimed at improving the quality of liquidity management in supervised banks and strengthening their ability to absorb liquidity shocks on their own. Liquidity ratios are positioned as ancillary requirements supplementing capital adequacy requirements. Unlike capital adequacy requirements, which are difficult to monitor due to information asymmetry in assessing the quality of the loan portfolio, liquidity requirements are relatively easy to monitor. In addition, in the presence of market discipline and in the absence of government support programs for banks, a bank's ability to maintain an adequate balance of liquid assets is a strong signal of the quality of a bank's loan portfolio and thus helps overcome information asymmetries.

One of the systemic risks historically inherent in the banking sector of Kazakhstan is the instability of funding sources, their short-term nature, concentration and dependence on the quasi-public sector, which, for their part, can trigger the realization of liquidity risk. Despite the systemic liquidity surplus, the idiosyncratic liquidity risk inherent in individual banks is significant due to the risks of outflow of customer resources because of a limited ability of banks to replace existing funding sources.

Based on these liquidity risks, we assessed how adequately the new LCR and NSFR liquidity standards assess the stability of funding taking into account the specifics of the domestic deposit market, as well as the risks of outflows given volatility of the funding base. In sections 2 and 3, we described the introduction of new liquidity standards in Kazakhstan, identified shortcomings in the current procedure for calculating liquidity ratios, and recalculated liquidity ratios taking into account requirements that consider the specifics of Kazakhstan's banking sector. In Section 4, we examined volatility of funding for individual banks in the event of idiosyncratic risk associated with the depositor flight as well as the LLR facility, and in addition, we proposed measures to apply an alternative approach to the LCR calculation in the face of a shortage of stable funding. In Section 5, we analyzed the risks of wholesale funding and concentration risks, including the assessment of consequences of an outflow of funds from the bank's five largest depositors.

2. New Regime of Bank Liquidity Regulation

After the 2008 global financial crisis, in order to strengthen bank sustainability to liquidity risk in the short- and medium term, the Basel Committee on Banking Supervision (BCBS) designed two new liquidity standards:

- Liquidity Coverage Ratio (LCR), which shows whether high-quality liquid assets are adequate to cover short-term liabilities over a 30-day horizon;

- Net Stable Funding Ratio (NSFR), which reflects adequacy and stability of funds attracted by a bank over one-year horizon. The NSFR assesses the amount of stable sources of funding based on liquidity of available assets and the probability of searching for resources to meet contingent liabilities (BCBS, 2013).

The LCR ratio is based on the principle of liquidity management and control through the formation of a liquidity buffer sufficient to cover a 30-day outflow, premised on the behavioral data of clients during periods of stress. The NSFR also lies on the core of assessing the adequacy of available stable funding based on the behavioral principle.

As recommended by the BCBS, the implementation of LCR has been phased in from 2015, reaching a threshold of 1.0 by 2019. The start of NSFR implementation into the supervisory practice was planned for a later date without a phased adaptation of banks' balance sheets to this standard.

In Kazakhstan's practice, since mid-2016, the LCR has been calculated in a test mode with the introduction into mandatory supervision from September 2018 at 0.5 by increasing the threshold on a step-by-step basis to 1.0 by 2022.

The NSFR ratio was adapted and implemented in Kazakhstan later than the LCR. Starting from 2018, banks have furnished the regulator with the results of NSFR calculations in a test mode on a monthly basis with a view to assess liquidity risk. The NSFR equal to 1.0 was introduced into the perimeter of prudential regulation from 2019.

In Kazakhstan, the liquidity regulation was carried out before the implementation of LCR and NSFR as part of prudential requirements to liquidity ratios calculated as the ratio of average monthly highly liquid assets of a bank and its average monthly liabilities depending on their maturity and currency. However, the meaningfulness of these ratios was distorted because when they were calculated, the deposit maturities were included according to the contractual terms. The actual deposit holding terms were in practice much shorter compared to the contractual terms, as the maturities of term deposits offered by banks allowed withdrawals at any time without a penalty (the NBK's Financial Stability Report for 2015-2017, 2018-2H 2019). Considering that 80% or more of the banks' funding base consist of customer deposits, which gradually replaced the debt funding after the 2008 crisis, liquidity ratios calculated based on their contractual terms were uninformative in terms of liquidity risk management.

One of the distinguishing features of new prudential liquidity ratios should have been taking into consideration the terms of deposit maturities that discourage early withdrawal. In addition, new liquidity standards should have taken into account the historical volatility of the funding base and risks inherent in Kazakhstani banks.

In 2018, the NBK has initiated a set of measures aimed at developing and advancing the sustainable forms of funding including the introduction of differentiated cap interest rates of the KDIF (Deposit Insurance Fund) on retail deposits depending on the presence

of terms and conditions discouraging early deposit withdrawals as well as the introduction of savings deposits where a loss of interest and mandatory 30-day pre-notification is provided for in case of early withdrawal. However, the algorithm of LCR and NSFR calculation based on the most recent changes has not been revised (See Section 3).

3. Deposit Stability and Calculation of New Liquidity Ratios

The Basel standards recommend a minimum amount of assets to determine and maintain such liquidity level by banks that would not exclude liquidity risk but would reduce the likelihood of a systemic crisis. Thus, each supervisory authority should design its prudential requirements to liquidity based on specifics of the banking system whereby ensuring transparency of parameters and clarity of their definition (BCBS, 2013).

The effectiveness and meaningfulness of LCR and NSFR in relation to liquidity risk directly depends on the metrics established on the basis of judgments about the behavior of investors in a crisis, as well as the ability of the regulator and financial institutions to divide this behavior into stable or unstable (Blundell-Wignall and Atkinson, 2010).

The importance of correct and reasonable recording of customer deposits in assessing liquidity risks from the standpoint of soundness and stability of Kazakhstani banks is extremely high since over the past ten years customer deposits have become the main source of their funding, having increased from 57% at the beginning of 2010 to 81% in 2021.

The analysis of prudential requirements to LCR and NSFR implemented in Kazakhstan showed that one of the factors that reduce their meaningfulness is the overestimation of stability of retail deposits and the calculation of corresponding outflows on such deposits.

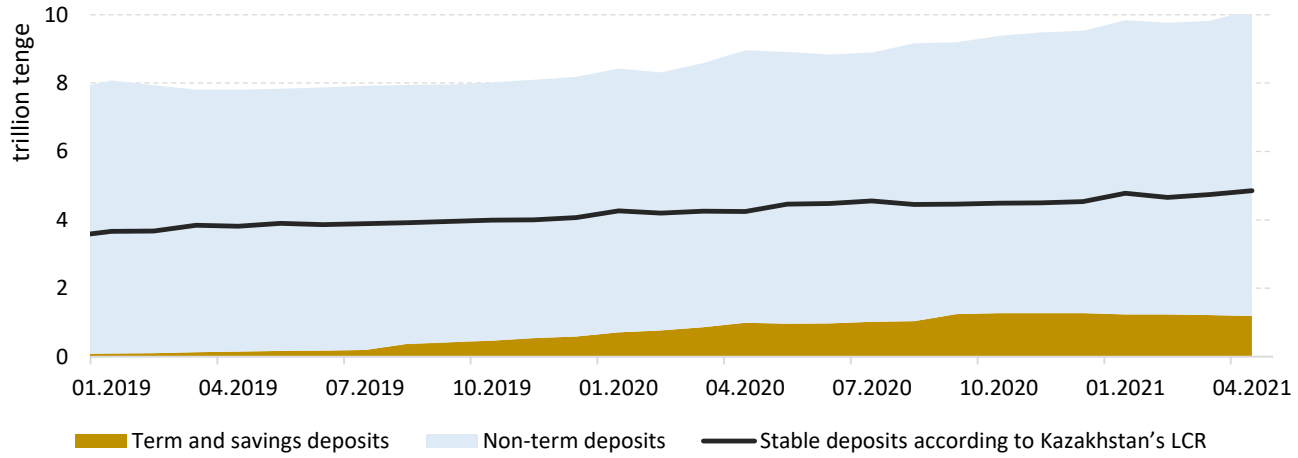
In particular, according to Kazakhstani requirements, when calculating LCR and NSFR, all retail deposits within the insured amount and regardless of the presence of early withdrawal provisions are classified as stable with a low outflow rate of 5%, and the rest are recognized as less stable with a 10% ratio.

At the same time, according to the BCBS recommendations, the presence of insurance is not a sufficient condition for classifying deposits as stable funding. Classification of deposits as stable funds requires consideration of other criteria, such as the existence of early withdrawal provisions (loss of interest, 30-days pre-notification), or the existence of established relationships that make withdrawals extremely unlikely (for example, transaction accounts to which wages and income are regularly credited and other transactions are conducted). At the same time, other easily withdrawable deposits, according to the BCBS recommendations, should be classified as less stable deposits with a higher outflow rate. In a number of countries (for example, the EU countries, Russia, etc.), in order to classify deposits as stable funds, in addition to the presence of insurance, similar conditions must be met. Besides, according to the regulatory requirements of these countries, the factor that increases the risk of deposit outflow is the possibility of remote access and management of the deposit via the Internet. Such deposits are not classified as stable deposits and have a higher run-off factor.

In Kazakhstan, before the 4th quarter of 2018, classification of deposits as term deposits and non-term deposits was quite nominal since the possibility of early withdrawal

of term deposits without any limitations and penalties made them equal with demand deposits and current accounts. In this regard, at the end of 2018, the definition of deposit "term structure" was introduced within the framework of the KDIF's cap rates. With the introduction of the new deposit classification mechanism, only 1% of retail deposits could actually be classified as stable according to the BCBS definition. In calculating the LCR, 48% of retail deposits are classified as stable deposits, which also include non-term deposits within the insured amount (Figure 1), while term deposits that meet the definition of "stable" according to the Basel and savings deposits that are completely excluded from outflows account for only 12%. As a result, LCR and NSFR do not fully reflect liquidity and funding risk.

Figure 1. "Stable" and "less stable" retail deposits according to Kazakhstan's definition of the LCR and under the BCBS standard.



Note: "Term deposits" by the KDIF's definition mean deposits that have a penalty for early withdrawal not lower than the minimum set by the KDIF. Since the penalty for early withdrawal on savings deposits prescribed in the Civil Code exceeds the minimum amount, the savings deposits fall under the definition of term deposits. Deposits of Otbassy Bank as an integral part of the accumulation and saving contract including the bank's obligation to provide a loan at a rate below the market as well as other deposits subsidized by the government are excluded from the statistics on retail deposits.

To take into account the term structure of deposits, we assessed the change in LCR and NSFR when rationalizing the prudential requirements for calculating these ratios. Thus, we have divided retail deposits into stable and less stable deposits according to the BCBS recommendations and based on specifics of the domestic deposit market.

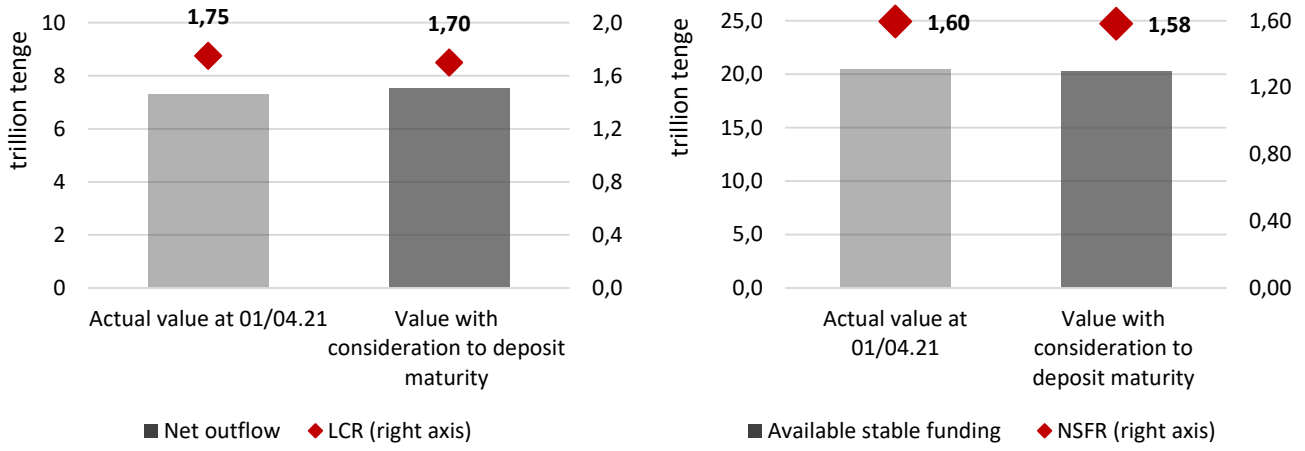
In calculation of LCR and NSFR, the volumes of stable and less stable deposits included in the amount of cash outflow and available stable funding were adjusted. The adjustment was made on the basis of KDIF data on retail deposits based on their classification into deposits that comply with maturity requirements and deposits that do not comply with maturity requirements according to the KDIF's Methodology[4].

As a result, a net cash outflow across the system increased by 3% only from 7.3 trillion tenge to 7.5 trillion tenge, thus slightly reducing the LCR ratio by 52 basis points (Figure 2). The volume of available stable funding in the system decreased by 1% from 20.4 trillion tenge to 20.3 trillion tenge while the NSFR went down by 12 basis points only.

[4] The Methodology for Determining and Setting a Maximum Interest Rate on New Deposits of Individuals approved by the Board Decision of the "Kazakhstan Deposit Insurance Fund" JSC of July 12, 2018 No.12

It is worth mentioning that the 10% run-off factor on unstable deposits applied in the adjustment is the minimum ratio recommended by the BCBS. The BCBS allows supervisors to use ratios higher than those recommended, based on the historical volatility of deposits in a given jurisdiction. At the same time, in Kazakhstan's practice, the outflow of retail and corporate deposits during realization of the idiosyncratic risk of individual banks reached up to 1/3 of the deposit base (See Section 4).

Figure 2. The available liquidity buffer enables banks to meet the LCR and NSFR ratios, even with consideration to adjustments of the volumes of stable and less stable deposits included in their calculation



Data Source: bank statements, the authors' estimate

Therefore, bank liquidity surplus allows all banks to comply with the existing LCR and NSFR ratios in accounting for deposit maturities under the international practices. Accounting for maturity of retail deposits, in addition to the existing accounting for the presence of guarantees, will require the introduction of a regulatory definition of maturity into the standard, similar to the definition used in the KDIF accession agreement.

The effect on the ratios and on the amount of required liquid assets is small compared to the losses that the banking system may incur because of the distorting effect of the ratio. In particular, tying the LCR only to the stipulation of deposit insurance without taking into account the economic characteristics of funding distorts motivation and pricing in the funding market, pushes banks towards less efficient ways of managing liquidity risk, and creates an unreasonably high premium between deposits.

Taking into account the term structure of deposits will bring the Kazakhstani LCR ratio closer to the Basel recommendations not only in form, but also in spirit and intentions of the implementators. The use of an explicit definition of the term structure in the Kazakhstani LCR ratio will allow the banking system to attract funding with more efficient combinations of risks and funding costs.

The most optimal period for such reform in liquidity ratios is the period of significant liquidity surplus that has been observed in the banking system of Kazakhstan for the fifth year already but which will inevitably decrease in the medium term. An undoubted advantage of such solution will be an increase in the meaningfulness and effectiveness of the implemented liquidity standards with minimal costs.

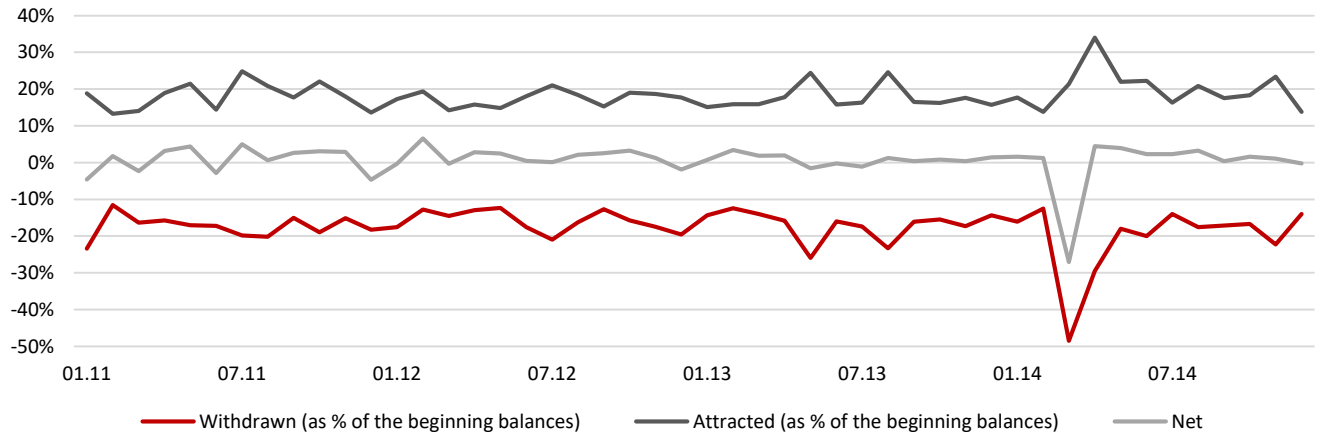
4. Liquidity Risks and the Lender of Last Resort Facility

Liquidity performance indicators improve the ability of the banking sector to absorb economic and financial shocks that reduce confidence in the banking system. However, during a period of stress, it is quite normal for a bank to use high-quality liquid assets to meet obligations on realized outflows.

The liquidity coverage ratio is an essential part of the Basel III framework, which encourages the supervised banks to hold enough liquidity so as not to turn central banks into "lenders of first resort". The interplay between the liquidity coverage ratio and the central bank's emergency liquidity arrangements is critical to properly understand, assess, and effectively manage liquidity risk, since the central bank lending is the only reliable form of liquidity in times of stress. Thus, in the moments of idiosyncratic shock to an individual bank, the important function of the central bank as a lender of last resort becomes relevant.

In Kazakhstan's practice, during realization of the idiosyncratic risk of individual banks the outflow of retail and corporate deposits reached up to 1/3 of the deposit base. An example of exposure to a depositor flight is a "bank run" case: massive deposit withdrawals of depositors of three banks in February 2014 in response to false messages in instant messengers about their financial insolvency. For banks, the consequence of SMS attacks was the withdrawal of term deposits of more than 400 billion tenge by individuals in the last ten days of February, which amounted to about 50% of all retail term deposits at these banks (Figure 3).

Figure 3. About 50% of retail term deposits had been withdrawn by depositors of the three banks that suffered from the SMS-attack

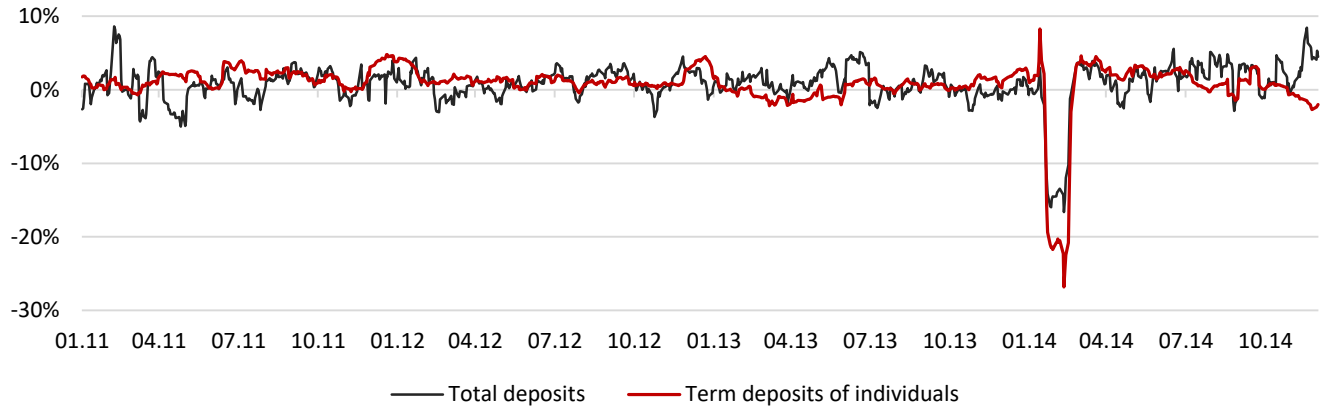


Data Source: bank statements, the authors' estimate

It should be noted that 30-day changes in the volume of term deposits of these banks during previous three years rarely exceeded 5% in either direction. The standard deviation for this sample was 1.8% (Figure 4), which is much less than the run-off factor (5%) recommended by the Basel for "stable" retail deposits and applied in Kazakhstan. However, these statistics are not informative as an indicator of liquidity risks because the distribution is fat-tailed. Thus, by end-February 2014, a net outflow of retail term deposits during 30 days accounted for 27% (Figures 3 and 4). This case also showed that being in

compliance with the liquidity ratio is not sufficient to ensure that a bank can cope with bank runs on its own.

Figure 4. A 30-day change in deposits of three banks



Note: The logarithm of change in deposits (the total deposit base and term deposits of individuals in the tenge) compared to the same day of the preceding month. Calculated based on the daily data in cumulative balance sheet of the three banks suffered from the bank run in 2014.
Data Source: bank statements, the authors' estimate

For the banking sector of Kazakhstan, one of the most important systemic risks on the funding side is a high concentration and dependence on the quasi-public sector. Deposits of large state-owned companies are comparable in scale to securities issues and other wholesale funding instruments but unlike wholesale funding, corporate investors in Kazakhstan have the right of early withdrawal enshrined in the Civil Code of the Republic of Kazakhstan.

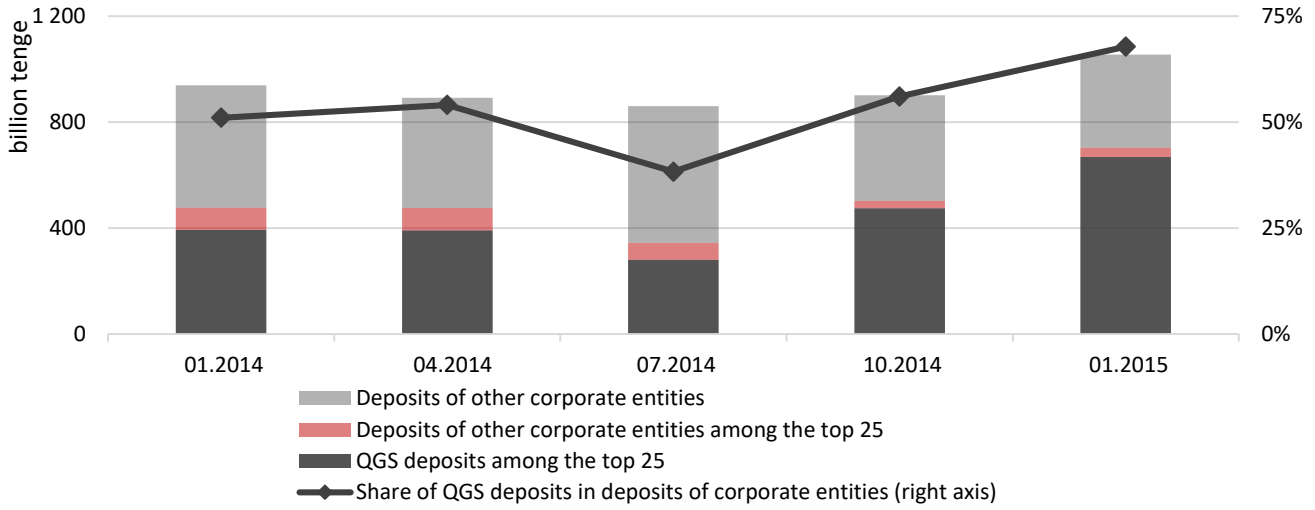
In general, without regard to Kazakhstani circumstances, short-term wholesale funding is less stable in times of crisis compared to retail deposits. Yorulmazer (2008), in his analysis of Northern Rock, makes a point that banks which were more relying on wholesale financing suffered large losses as they adjusted to the financial shock. Shin (2008), reviewing the Northern Rock's annual report for 2007, noted a high refinancing risk caused by the high proportion of short-term unsecured securities, loans and term deposits. The outflow from the bank was caused by the refusal of large creditors to refinance the bank. The key sign of instability here is the short duration of funding, not its concentration.

Taking the case of the SMS attack against three Kazakhstani banks in 2014, along with the outflow of retail term deposits, these banks faced the problem associated with an outflow of large wholesale funding. At the time of attack, the share of 25 largest bank creditors in three banks as a whole was 66% of corporate deposits. Notably, deposits of state-owned companies (the quasi-government sector, or QGS) accounted for 54% of all corporate deposits and 93% of the QGS's funds were placed on term deposits.

Despite the availability of early redemption rights in respect of corporate term deposits, the QGS deposits with these banks were decreasing gradually and with a delay (unlike retail deposits) to 38% by mid-2014 (Figure 5). This reduced the liquidity of banks and weakened their ability to carry out day-to-day operations. By that time, the outflow of QGS funds had reached such a scale that the problem acquired an additional dimension extending beyond the plane of economic policy and prudential regulation. Starting from

the third quarter of 2014, the QGS began to increase the amount of funds at these banks. By end-2014, the share of QGS deposits in the corporate deposit portfolio of these banks not only restored but also went up to 68%!

Figure 5. The share of QGS deposits before and after the 2014 attack



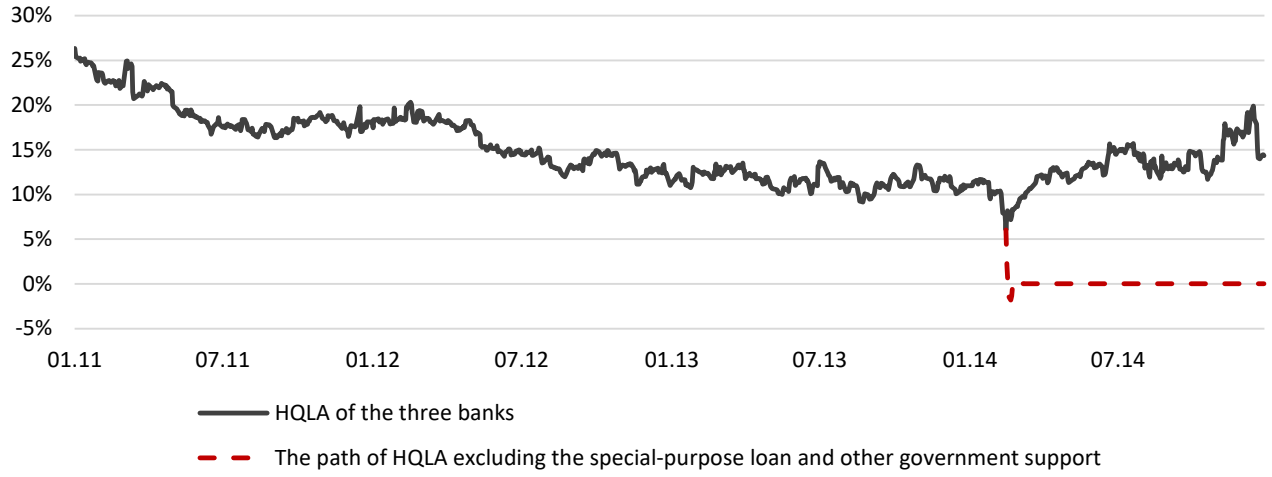
Notes: Deposits of government authorities, QGS entities, and the UAPF are included into QGS deposits
Data Source: bank statements, the authors' estimate

It should also be noted that at the time of the panic, almost 100% of government securities in bank portfolios were encumbered with repo transactions, and the channels for obtaining liquidity were exhausted. Thus, banks did not have the opportunity to obtain LLRs from the National Bank secured by HQLA, and the mechanism for providing LLRs secured by non-marketable assets in the form of a loan portfolio during the specified period was not envisaged by law. The regulatory framework for such a mechanism was created in 2019 only. However, in order to prevent the risk of contagion and the episode turning into a systemic panic, the National Bank, regardless of credit risks, provided the required emergency liquidity in the form of special-purpose loans to those banks. This allowed banks to fulfill obligations to their customers, stop liquidity risk and avoid loss of solvency.

It is generally accepted that large banks are more protected in terms of a dramatic outflow of customer funds due to the wide base of customer current accounts, which, as a rule, reduces sensitivity to resource instability. However, the lack of diversity in the sources of the resource base (customer deposits accounted for 73% of liabilities of the three banks) and limited opportunities to raise liquidity in the money markets did not allow the three banks to take up and absorb the shock on their own without an external support. Banks managed to restore the volume of their retail deposit base to the pre-shock level only by the end of 2014.

Without emergency liquidity from the National Bank and the government support in the form of injecting the QGS funds, the drop in volumes of high-quality liquid assets of these banks would have been more dramatic (Figure 6).

Figure 6. The share of HQLA in assets of the three banks after the SMS-attack decreased to 6% and the banks would not have been able to meet their existing obligations without the government support



Notes: in order to calculate the path of HQLA excluding the special-purpose loan and other government support, the HQLA and bank assets were reduced by the amount of received special-purpose loan
Data Source: bank statements, the authors' estimate.

Thus, despite the stable situation with systemic liquidity, one of the systemic risks historically inherent in the banking sector of Kazakhstan is the lack of stable funding sources. According to the BCBS recommendations on the liquidity coverage ratio – LCR 31, "Alternative Liquidity Approaches" (BCBS, 2019), in jurisdictions with a shortage of stable funding sources, contractual committed liquidity facilities from the relevant central bank for a fee can act as an asset taken into account when calculating LCR. This approach is used by the Bank of Russia, which enables to use irrevocable credit facilities opened by the Bank of Russia as assets when calculating the LCR ratio.

It is worth mentioning that in order to reduce the credit risk of the National Bank and the risks of irresponsible behavior of banks in the event of providing emergency liquidity, the LLR mechanism was revised and streamlined based on the best international practices of central banks and the IMF's recommendations. In particular, since 2019, legislative provisions have been introduced envisaging that the National Bank will extend LLRs only to solvent banks experiencing temporary liquidity problems, on market conditions, for a short period (up to 3 months) and only against the pledge of assets. To expand the ability of banks to attract emergency liquidity under the LLR mechanism, real estate and loan portfolio of banks that meet certain criteria and have passed the preliminary collateral preposition procedure have been included into the list of eligible collateral.

Non-marketable assets that have passed the procedure of collateral preposition with the regulator are a full-fledged and independent source of liquidity, which can be included in high-quality liquid assets when calculating LCR. Moreover, this approach is set forth in the BCBS recommendations as an alternative approach for jurisdictions with a shortage of stable funding sources.

Despite the existing significant liquidity surplus associated with lower lending growth due to a shortage of good quality borrowers, in the medium term, as lending intensifies, LCR requirements to maintain a high level of HQLA may put pressure on banks' balance sheets and earnings. The emergency liquidity facility secured by the loan portfolio enables to provide a much larger amount of liquidity than is possible, or advisable, for a second-tier bank to hold all the time. Despite the fact that the regulatory framework for this mechanism was developed in 2019, its full implementation requires that banks themselves should preposition the loan portfolio. For the regulator's part, this mechanism can be stimulated by introducing an alternative approach to the LCR calculation.

5. Risks from the Concentration of Funding

Under the new liquidity standards, the BCBS recommends higher outflow rates for wholesale funding compared to retail deposits. Thus, for unsecured wholesale financing attracted from non-financial corporations, government agencies, central banks, development institutions, the run-off factor is set at 40%. In the event if deposits attracted from such organizations are covered by a deposit insurance scheme or other government guarantee, then the outflow rate is set at 20%.

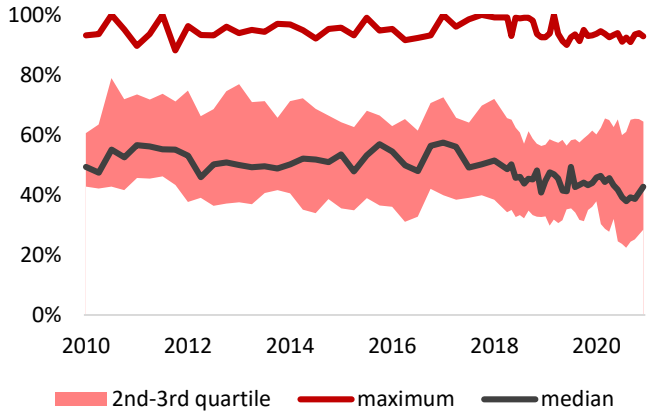
In Kazakhstan, taking into account high concentration risks, a differentiated approach has been established regarding the run-off factor for corporate wholesale funding depending on the amount of attracted funding: (1) 60% for large funds, which is higher than the values recommended by the BCBS; (2) and for other corporate funds, the run-off factor is 40%.

In Kazakhstan, the problem of reliance on large wholesale funding is quite pronounced and carries both the liquidity risk and funding risk at the same time.

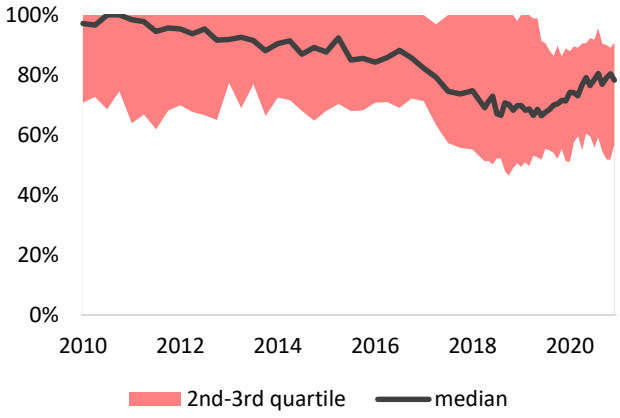
Despite the fact that at the systemic level, the reliance of the banking sector on the largest corporate lenders has been gradually decreasing over the past 10 years (from 47% in 2010 to 30% in 2021), however, in half of Kazakhstani banks, the concentration of the largest creditors in liabilities is significant and exceeds 39% (Figure 7.A). Along with that, a large-scale wholesale funding is attracted mainly in the form of deposits (Figure 7.B).

Figure 7.

A. The distribution of the share of top 25 corporate creditors in the bank funding



B. The share of deposits among top 25 corporate creditors

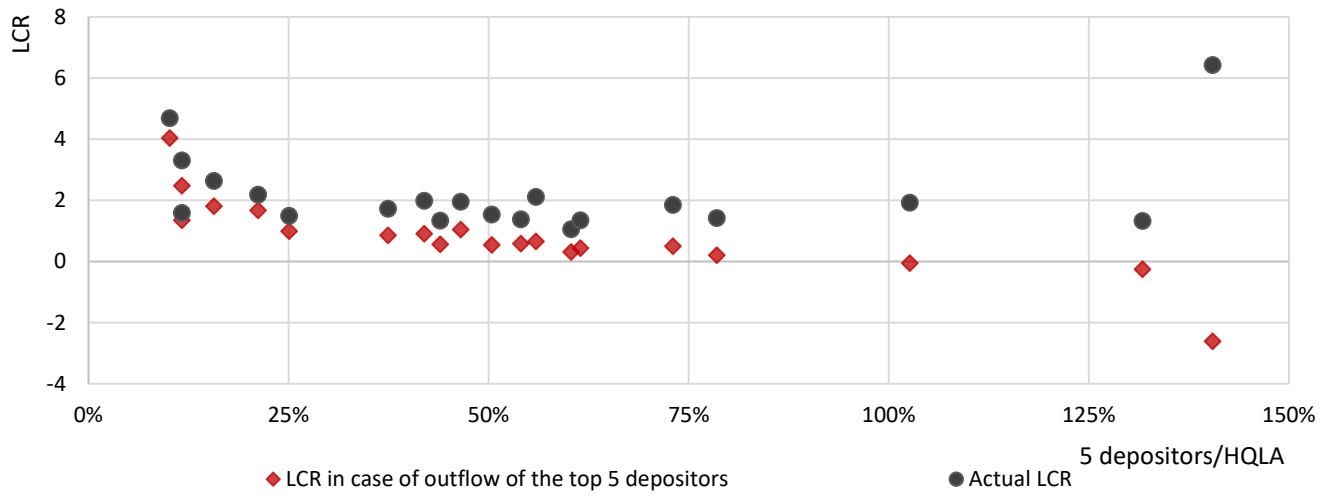


Notes: Figure A shows the dynamics in the ratio of liabilities of each bank to 25 largest corporate creditors and total liabilities of the bank distributed by quartiles. Figure B presents the dynamics in the share of deposits in liabilities of each bank to 25 largest corporate creditors distributed by quartiles.
Source: banks' statements

A significant concentration of large deposits in the wholesale funding of banks considerably increases their liquidity risks. To assess the impact of withdrawals of funds by large depositors on liquidity ratios, an analysis of withdrawals of funds by the top 5 depositors of banks was performed, which showed a violation of the LCR ratio at 13 banks in the implementation of this scenario. At the same time, three banks do not have enough HQLA to cover such outflow (Figure 8)

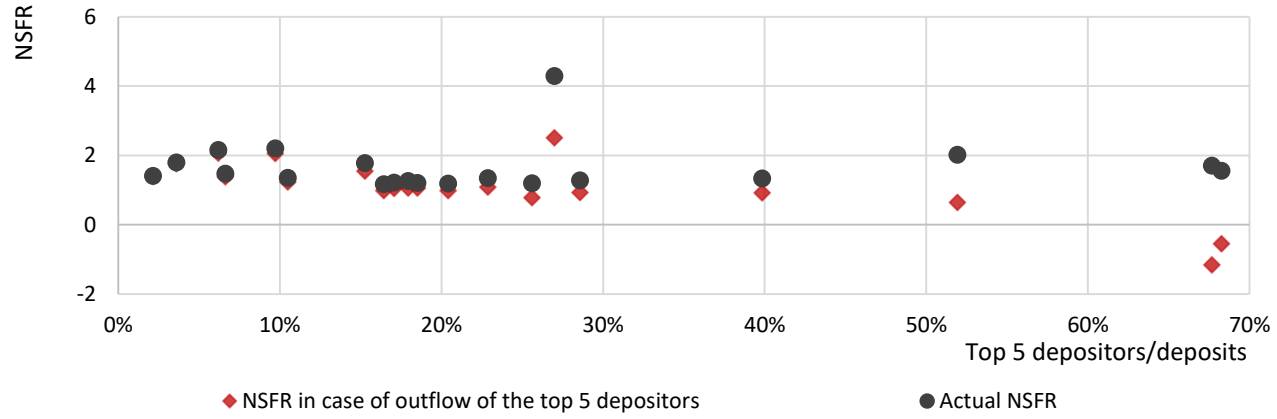
A similar calculation was made in respect of NSFR. The outflow of the five largest depositors will have a significant impact on the level of available stable funding and, accordingly, on the NSFR. In particular, eight banks will violate NSFR if five large depositors leave. It should be noted that historically in Kazakhstan, when a bank's condition deteriorates, the largest depositors are the first to leave (Figure 9).

Figure 8. LCR in case of outflow of the top 5 bank depositors



Note: LCR values (actual and in case of realization of the stress scenario) of individual banks are denoted with markers
Source: banks' statements, the authors' computations

Figure 9. NSFR in case of outflow of the top 5 bank depositors



Note: NSFR values (actual and in case of realization of the stress scenario) of individual banks are denoted with markers
Source: banks' statements, the authors' computations

The performed sensitivity test for deposit concentration risk shows that the HQLA reserve of individual banks will not be enough to cover losses of the five largest depositors in the banking system. Alongside with that, the majority of banks have violation of liquidity ratios, which indicates high risks of concentration on the funding side.

This analysis also points to the necessity of implementing an alternative approach to the LCR calculation and accelerating the full implementation of the collateral preposition mechanism, since, as practice shows, the largest depositors are among the first to withdraw funds from deposits.

6. Discussion

Regulatory requirements do not exist in a vacuum. Therefore, their effectiveness and usefulness cannot be assessed in isolation from other requirements and from the competitive and regulatory environment. In this regard, liquidity requirements are part of a system of regulatory requirements and financial stability frameworks such as deposit insurance, emergency liquidity provision and other forms of government support. The relationship and interaction between them are complex. As a result, deviation from the best practice in one aspect of regulation can significantly change the role and contribution of the liquidity ratio to the stability and functionality of the banking system.

For example, liquidity requirements are complementary to capital adequacy requirements. Hoerova et al (2018) argue that liquidity regulation would not be necessary if it were not for the problem of control over capital adequacy compliance and the regulator could reliably distinguish illiquid from insolvent banks. However, in practice, the regulator does not have perfect information: its view of the actual capital of the supervised bank is distorted and is heavily relying on the quality of bank reporting, vigilance of supervision and the integrity and commitment of an independent auditor.

The emergency liquidity facility may lead to inadvertent bailouts of insolvent banks and create moral hazards. Under these conditions, liquidity requirements enable to ensure that banks have their own liquidity buffers and, to a certain extent, reduce dependence on the LLR as well as reduce certain distortions of government liquidity support. In addition, one of the advantages of new liquidity requirements, according to Hoerova et al (2018), is their lower verification cost compared to capital adequacy requirements.

In this regard, there is another illustrative example of conditionality of the beneficial effect of a regulatory standard. Thus, when the government support is provided to a bank, with systematic violations and deviations from the best practice of resolving unsound banks, with any other form of eroding market discipline that allows an unsound bank to maintain the required liquidity balance from external sources, the correlation between abundant liquidity and long-term stability weakens dramatically. In this case, the liquidity ratio loses its value as a signal of the bank's solvency.

These sentiments also reflect in the BCBS standards. So, the BCBS and its Board[5] consistently emphasized that the interaction between the liquidity ratio and the emergency liquidity facilitys from the central bank is critical for the correct understanding, assessment

[5] The Group of Central Bank Governors and Heads of Supervision, or GHOS). According to the Charter, the BCBS is accountable to GHOS; the GHOS signs off the main decisions made by the BCBS, approves the Charter and amendments thereto, and sets out the general area of focus, appoints the BCBS Chair from its ranks.

and effective management of liquidity risks, since in cases of stress, the only reliable form of liquidity is the central bank credit.

7. Conclusion

In this paper, we carry out a review of the new regime of bank liquidity regulation, including the assessment of compliance of ratios implemented in Kazakhstan with the Basel III standards and the international practice. The most essential difference between Kazakhstan's interpretation of LCR and that recommended by the BCBS is the absence of accounting for maturity and other significant characteristics of funding.

Accounting for maturity of retail deposits, in addition to the existing accounting for the presence of retail deposit insurance, will require the introduction of a regulatory definition of maturity in the standard, similar to the definition used by the KDIF capping mechanism.

The results of review showed that accounting for the term structure of deposits will increase the denominator and reduce the LCR. The effect on the ratio and on the amount of required liquid assets is relatively small compared to losses incurred by the banking system because of the distorting effect of the standard. In particular, tying the LCR only to the stipulation of retail deposit insurance without taking into account the economic characteristics of funding distorts the motivation and pricing in the funding market, pushes banks towards less efficient ways of managing liquidity risk, and creates an unreasonably high premium between deposits. In particular, the LCR in Kazakhstan has become one of the factors in the apperance of a wide spread between the rates on savings and term deposits.

In addition, accounting for the term structure of deposits will bring the LCR ratio in Kazakhstan closer to the BCBS recommendations not only in form, but also to the stated intentions of the implementators. The use of an explicit definition of maturity in Kazakhstan's LCR liquidity ratio will allow the banking system to attract funding that finds more effective combinations of risks and the cost of funding.

The most optimal period for such reform in terms of liquidity ratios is the period of abundant liquidity, which the banking system of Kazakhstan has been experiencing for the fifth year already but which will inevitably end in the medium term.

In addition, the results of analysis of behavioral data of depositors during realization of the idiosyncratic risk associated with the flight of depositors showed a rapid liquidity depletion at banks. Liquidity ratios cannot completely eliminate the effects of shocks, and in such cases the emergency liquidity facility provides a much greater level of protection against both the risk of outflows from an individual bank and the system. The HQLA shortage in these scenarios showed the need for a full-fledged launch of the mechanism for preposition of non-marketable assets that can serve as collateral for provision of LLRs on market conditions, thus reducing the risks of bank abuse. To encourage the development of this mechanism, we proposed the use of an alternative approach to the LCR calculation.

A more effective and more appropriate way to reduce the risk of outflow is to further develop mechanisms for providing emergency liquidity based on the preposition of illiquid assets. The regulatory framework for this mechanism was developed in 2019, but its full implementation requires the preposition of the loan portfolio by banks themselves. This

approach was also supported by the group of heads of central banks and bank supervisors, who recommended that the BCBS make further effort in analysing and accounting for the interaction of liquidity standards and frameworks for the provision of liquidity from the central bank. As a result, in 2019, the BCBS developed and adopted an alternative approach to the LCR calculation for countries with a shortage of stable funds.

List of References

1. Allen W. A., Chan K. K, Milne A. K. L. and Thomas S. H., 2010. Basel III: Is the Cure Worse than the Disease? Available at SSRN: http://ssrn.com/abstract=1688594 or *http://dx.doi.org/10.2139/ssrn.1688594 file://tsclient/C/stata/SSRN-id1688594.pdf*
2. BCBS (Basel Committee on Banking Supervision). 2010. Basel III: International framework for liquidity risk measurement, standards and monitoring. Basel
3. BCBS (Basel Committee on Banking Supervision). 2013. Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools: Basel
4. BCBS (Basel Committee on Banking Supervision). 2019 LCR31 Alternative liquidity approaches
5. Blundell-Wignall, A., & Atkinson, P., 2010. Thinking beyond BASEL III: Necessary solutions for capital and liquidity. OECD Journal: Financial market trends – Volume 2010 Issue 1
6. Chairnoff H., 1967. Deposit variability: a banker's headache. Federal Reserve Bank of Philadelphia. Business Review, September 1967
7. Dietrich A., Wanzenried G., Hess K., 2013. The good and bad news about the new liquidity rules of Basel III in Western European countries
8. Discussion Paper on retail deposits subject to higher outflows for the purposes of liquidity reporting under the draft Capital Requirements Regulation (CRR), European Banking Authority, EBA/DP/2013/02
9. Guidelines on retail deposits subject to different outflows for purposes of liquidity reporting under Regulation (EU) no 575/2013, on prudential requirements for credit institutions and investment firms and amending Regulation (EU) no 648/2012 (Capital Requirements Regulation – CRR), European Banking Authority, EBA/GL/2013/01
10. Marie Hoerova, Caterina Mendicino, Kalin Nikolov, Glenn Schepens, Skander Van den Heuvel, 2018. Benefits and costs of liquidity regulation. ECB Discussion papers
11. Regulation (EU) No 575/2013 of The European Parliament And of The Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012, Legislative act, Current consolidated version: 28/12/2020
12. Results of the comprehensive quantitative impact study / December 2010/ Basel Committee on Banking Supervision
13. Shin H.S., 2008, Reflections on Modern Bank Runs: A Case Study of Northern Rock, working paper Princeton University
14. Yorulmazer T., 2009, Liquidity, Bank Runs and Bailouts: Spillover Effects During the Northern Rock Episode, Federal Reserve Bank of New York
15. Regulation of the Bank of Russia of 30.05.2014 No. 421-P "Regarding the Procedure for Calculation of Liquidity Coverage Ratio ("Basel III")" as registered with the Russian Ministry of Justice 25.06.2014 No. 32844
16. Regulation (EU) No. 575/2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No. 648/2012 (Capital requirements Regulation – CRR)

17. Board Resolution of the National Bank of the Republic of Kazakhstan of 13.09.2017 No.170 “On setting regulatory ratios and methods for calculating prudential ratios and other mandatory norms and limits, the size of bank capital and the Rules for calculation of foreign currency exposure and its limits”

Annex

Benchmarking of the BCBS standard and Kazakhstan's practice of LCR implementation

Table 1. High quality liquid assets

Basel		***Kazakhstan***	
Level 1 high quality liquid assets			
Cash	100%	Cash on hand	100%
Reserves at the CB provided that the bank may withdraw them if the liquidity position deteriorates	100%	Deposits at the National Bank	100%
Marketable securities issued (backed) by sovereigns, central banks, governments, Bank for International Settlements, IMF, ECB, European Commission, international development banks, subject to all of the following conditions: (i) securities have 0% risk ratio under the Standardized Approach of the Basel II framework; (ii) are traded in large and active repo markets or money markets that are characterized by a low concentration rate; (iii) are a reliable source of liquidity in the markets (repo or sale) even in a distressed market environment; (iv) issuers of securities are not banks or companies providing financial services.	100%	Claims on the Government of Kazakhstan, National Bank, including securities guaranteed by the Government of Kazakhstan, National Bank as well as securities of a corporate entity engaged in repurchase of retail mortgage loans where 100% of shares are owned by the National Bank; claims on foreign central governments and foreign central banks, on IFIs, including securities guaranteed by foreign governments and foreign central banks, securities of IFIs in public float on international stock exchanges specified in the List of trade organizers recognized by international stock exchanges and meeting the following requirements: they are classified as the first group of assets with a 0% credit risk weighting; are not liabilities of financial organizations or their affiliated entities.	100%
Sovereign debt obligations or central bank obligations issued in the national currency of the countries where the liquidity risk was assumed or countries of bank origin (if a sovereign bank has a risk weighting different from 0%)	100%	Claims on foreign central governments and central banks in the form of securities denominated in the currency of issuing country, in the event if claims on foreign central governments and foreign central banks have a credit risk weighting above 0 (zero)%	100%
Level 2 high-quality liquid assets (maximum 40% of total HQLA)			
Level 2A HQLA			

Securities issued by governments, central banks, development banks subject to all of the following conditions: (i) risk ratio under the Standardized Approach of the Basel II framework is 20%; (ii) are traded in large and active repo markets or money markets that are characterized by a low concentration rate; (iii) are a reliable source of liquidity in the markets (repo or sale) even in a distressed market environment: decline in the price of securities by not more than 10% or not more than 10 pp of the discount during a 30-day period; (iv) issuers of securities are not banks or companies providing financial services - Asset-backed bonds rated AA- and higher	85%	Claims on the Ministry of Information and Social Development of Kazakhstan (MISD RK), including government securities issued by the MISD RK with a risk weighting of 20%; Claims on foreign central governments and foreign central banks, on foreign local authorities, IFIs, meeting the following requirements: having the credit risk weighting of 20%; over the recent ten years, there were no facts of impairment expressed in the reduction of market value by 10% or more during any 30 calendar days; they are not liabilities of financial organizations or their affiliated entities.	85%
Corporate debt securities subject to all of the following conditions: (i) issuers of securities are not banks, their affiliated entities or companies providing financial services; (ii) rated AA- and higher; (iii) are traded in large and active repo markets or money markets that are characterized by a low concentration rate; and (iv) are a reliable source of liquidity in the markets (repo or sale) even in a distressed market environment: decline in the price of securities by not more than 10% or not more than 10 pp of the discount during a 30-day period	85%	Securities issued by non-financial organizations meeting each of the following requirements: (1) have a long-term rating of at least AA- assigned by Standard & Poor's or a similar rating of another rating agency; (2) are in public float on international stock exchanges specified in the List of trade organizers recognized by international stock exchanges; (3) over the recent ten years, there were no facts of impairment expressed in the reduction of market value by 10% or more during any 30 calendar days.	85%
Level 2B HQLA (maximum 15% of total HQLA)			
Mortgage-backed securities subject to all of the following conditions: (i) securities and the underlying asset have not been created by the bank itself or its affiliated entities; (ii) rated AA- and higher; (iii) are traded in large and active repo markets or money markets that are characterized by a low concentration rate; (iv) are a reliable source of liquidity in the markets (repo or sale) even in a distressed market environment: decline in the price of	75%	Mortgage-backed securities other than financial derivatives and subordinated debt that are not liabilities of financial organizations or their affiliated entities, meeting the following requirements: (1) have a long-term rating of at least AA- assigned by Standard & Poor's or a similar rating of another rating agency; (2) are in public float on international stock exchanges specified in the List of trade organizers recognized by international stock exchanges;	85%

securities by not more than 20% or not more than 20 pp of the discount in a period of significant liquidity stress; (v) a pool of underlying assets is limited by a mortgage and cannot contain structured products; (vi) mortgage loans with full right of foreclosure and maximum LTV of 80% on average at disbursement serve as the underlying asset; (vii) in case of securitization, an issuer retain its share in securitized assets		(3) over the recent ten years, there were no facts of impairment expressed in the reduction of market value by 10% or more during any 30 calendar days.	
Corporate debt securities subject to all of the following conditions: Rated from BBB- to A+ (i) issuers of securities are not banks, their affiliated entities or companies providing financial services; (ii) a long-term credit rating from BBB- to A+; (iii) are traded in large and active repo markets or money markets that are characterized by a low concentration rate; (iv) are a reliable source of liquidity in the markets (repo or sale) even in a distressed market environment: decline in the price of securities by not more than 20% or not more than 20 pp of the discount in a period of significant liquidity stress.	50%		
Common stock subject to all of the following conditions: (i) issuers of securities are not banks, their affiliated entities or companies providing financial services; (ii) are traded on the stock exchange and have a centralized clearing; (iii) denominated in the national currency of the issuer's country or in the currency of the country where there is a risk to the bank's liquidity; (iv) are traded in large and active repo markets or money markets that are characterized by a low concentration rate; (v) are a reliable source of liquidity in the markets (repo or sale) even in a distressed market environment: decline in the price of	50%		

securities by not more than 40% or not more than 40 pp of the discount during 30 days in a period of significant liquidity stress			

Table 2. Cash Outflow

Basel		Kazakhstan	
Retail deposits[6]			
Stable deposits	5%	*Stable deposits*	5%
deposits covered within the framework of deposit insurance system[7], there is a long-standing relationship of depositors with a bank, thus making a deposit withdrawal highly unlikely;		insured retail deposits in the amount prescribed by the Law on mandatory deposit insurance	
Less stable deposits	10%	*Less stable deposits*	10%
- deposits not protected by a deposit insurance scheme - large deposits - deposits of wealthy depositors - easily withdrawable deposits - foreign currency deposits		retail deposits that are not subject to insurance or are insurable in the amount of excess over the level prescribed by the Law on mandatory deposit insurance	
		Other cash outflows on liabilities to individuals not included into lines 1 and 2 of this table	100%
Note: if, under the terms and conditions of a deposit, a depositor has no right to withdraw deposits during a 30-day LCR horizon or early deposit withdrawal will result in a penalty, then such deposit will not be included in the overall expected cash outflow. If, however, a depositor is allowed to withdraw such deposits without the application of respective penalty or despite the paragraph which says that the depositor has no legal right to withdraw such monies, then the entire category of these monies must be regarded as demand deposits (i.e. irrespective of the remaining maturity, the deposit repayment rates specified in		*In case of a possibility of early withdrawal of term deposits of individuals, such liabilities are included in the LCR calculation in full irrespective of their maturity.*	

[6] The Board Resolution No. 170 has a requirement whereby if early withdrawal of retail term deposits is possible, such liabilities are included in the calculation of the ratio in full irrespective of their maturity. However, in preparing the data for the LCR reporting and deposit reports submitted to the KDIF it appears that banks divide their existing retail deposit base proceeding from the criteria of insurance coverage of such deposits by the KDIF, while not taking into consideration the possibility of early withdrawal.

[7] The existence of deposit insurance is not sufficient for a deposit to be classified as stable.

paragraphs 74-81 (stable and less stable deposits) will be applied to the deposits).			
Funding received from SMEs: - a total amount received from one SME client is less than one million euro; - without the right of early withdrawal	5-10%	Deposits placed by non-financial organizations that are SMEs where the total volume does not exceed the equivalent of one million US dollars	10%
Unsecured wholesale funding			
Operational deposits (clearing, custodial accounts)	25%	Deposits related to clearing, custody, and liquidity management activities	25%
Unsecured wholesale funding provided by non-financial corporations and government authorities, central banks, multilateral development banks *This category includes all deposits and other types of unsecured financing from non-financial corporate clients (which do not refer to the category of small business clients), sovereigns, central banks, multilateral development banks.* *The run-off factor is set at 20%, if deposits of non-financial corporate clients, government authorities, central banks, and development banks are covered by a deposit insurance scheme or a government guarantee. Otherwise, the run-off factor is set at 40%.* Non-financial corporations are entities whose principal activities are the production of market goods and non-financial services. Non-financial corporations include the following legal entities: legally constituted corporations, branches of non-resident enterprises, quasi-corporations, notional resident units owning land, and resident non-profit institutions that are market producers of goods or non-financial services. (https://www.bis.org/statistics/glossary.htm?&selection=279&scope=Statistics&c=a&base=term)	20% - 40%	Deposits of non-financial organizations, the Government of the Republic of Kazakhstan, National Bank, local executive authorities of the Republic of Kazakhstan, international financial institutions, foreign central banks, local executive authorities of foreign countries	40%

		Deposits of non-financial organizations (a group of non-financial organizations when one legal entity is a large participant in another legal entity, and the amount of liabilities of each of the legal entities exceeds 0.5 (zero point five) per cent of the bank's equity), <u>in the amount exceeding 5 (five) per cent of the bank's liabilities</u>	60%
Unsecured wholesale funding received from other entities	100%	Liabilities to other corporate entities including liabilities on issued securities	100%
Secured funding			
Liabilities secured by level 1 HQLA or by central banks	0%	Liabilities secured by level 1 high quality liquid assets	0%
		Liabilities to the Government of the Republic of Kazakhstan and the National Bank	0%
Liabilities secured by level 2 HQLA	15%	Liabilities secured by level 2 HQLA	15%
Liabilities secured by national sovereigns, development banks that are not secured with level 1 or 2A HQLA, with risk ratio of 20% or less. Liabilities secured with mortgage-backed securities included with level 2B HQLA	25%	Liabilities to MISD RK, IFIs, with a risk weighting of not more than 20%, secured by assets that are not level one and level two high quality liquid assets	25%
Liabilities secured with other level 2B HQLA	50%		
Other secured liabilities	100%	Other secured liabilities	100%
Additional requirements to cash outflows			
Cash outflow on financial derivatives	100%		
Liquidity needs related to downgrade triggers embedded in financing transactions, derivatives and other contracts	100%	Increased liquidity needs on contingent liabilities, financial derivatives transactions and other operations in full amount in case if a bank is downgraded by 1 (one), 2 (two) or 3 (three) notch downgrade versus the current bank rating	100%
Liquidity needs related to the potential for valuation changes on posted collateral securing derivative and other transactions	20%	Increased liquidity needs in revaluation of collateral (except level one high quality liquid assets) on financial derivatives and other operations	20%

Liquidity needs related to excess non-segregated collateral held by the bank that could contractually be recalled at any time by the counterparty because the collateral is in excess of the counterparty's current collateral requirements	100%	The amount of excess collateral held by the bank in connection with maintaining the position on financial derivatives, which can be recalled at any time	100%
Liquidity needs related to contractually required collateral on transactions for which the counterparty has not yet demanded the collateral be posted	100%	Increased liquidity needs on operations that provide for collateral to be posted by the bank upon the counterparty's demand according to the contractual terms and conditions if such collateral has not been posted	100%
Liquidity needs related to contracts that allow collateral substitution to non-HQLA assets	100%	Increased liquidity needs related to the possibility of collateral to non-HQLA assets	100%
Liquidity needs related to market valuation changes on derivative or other transactions	The largest 30-day net outflow during the preceding 24 months	Increased liquidity needs in case of market valuation changes on financial derivative or other transactions	The largest 30-day net outflow during the preceding 24 months
Expected outflow on asset-backed securities covered by bonds and other structured financing instruments	100%	Outflow on securities issued by the bank and secured by the receipt of monies on assets and maturing during the calendar month following the date of the liquidity coverage ratio calculation (including on mortgage-backed securities)	100%
		Outflow on securities secured by the receipt of monies on assets and issued by special purpose entities of the bank (including financial derivatives providing for the holder's right to require an early repurchase in full or in part), maturing during the calendar month following the date of the liquidity coverage ratio calculation	100%
Credit and liquidity facilities:			
with repayment date of up to 30 days	100%		

an unused portion of credit facilities to retail clients and SMEs	5%	*an unused portion of credit facilities and liquidity facilities provided to individuals and SMEs*	5%
an unused portion of liquidity facilities to non-financial corporations, central banks, private enterprises and development banks	10%	*an unused portion of credit facilities provided to non-financial organizations, to the Government of Kazakhstan, National Bank, MISD RK and IFIs*	10%
an unused portion of liquidity facilities to non-financial corporations, private enterprises	30%	*an unused portion of liquidity facilities provided to non-financial organizations, the Government of Kazakhstan, National Bank, MISD RK and IFIs*	30%
an unused portion of guaranteed credit facilities and liquidity facilities provided to banks	40%	*an unused portion of credit facilities and liquidity facilities provided to other banks*	40%
an unused portion of credit facilities to other financial institutions including securities firms, insurance companies, and beneficiaries	40%	*an unused portion of credit facilities provided to non-bank financial organizations*	40%
an unused portion of liquidity facilities to other financial institutions including securities firms, insurance companies, and beneficiaries	100%	*an unused portion of liquidity facilities provided to other non-bank financial organizations*	100%
Credit facilities and liquidity facilities to other entities	100%	*an unused portion of credit facilities and liquidity facilities provided to other corporate entities (including special purpose entities of a bank)*	100%
Contractual obligations to provide funding within 30 days.	100%		
An expected outflow on contingent liabilities related to trade finance instruments	5% or less	Liabilities related to export and import financing of goods and services (on guarantees and sureties, letters of credit related to factoring and forfeiting)	5%
		Liabilities on guarantees and sureties, letters of credit not related to export and import financing of goods and services	10%
Other cash outflows provided for by contracts	100%	Other cash outflows on liabilities	100%