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FACTORS AFFECTING THE STRENGTH OF THE RESOURCE BASE OF COMMERCIAL BANKS

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Abstract: In this article, the factors affecting the strength of the resource base of commercial banks were evaluated based on economic-mathematical methods and scenario methods of stress testing were used. Also, as a result of exchange rate changes, ways to eliminate the imbalance in foreign currency deposits and loans were suggested.

Key words: loans to deposits (LTD) ratio, correlation, resource, resource base, risk, foreign currency, devaluation, revaluation, imbalance, exchange rate, short position, long position.

INTRODUCTION

Decree of the President of the Republic of Uzbekistan, 12.05.2020. № DP-5992 "On the Strategy for reforming the banking system of the Republic of Uzbekistan for 2020-2025" specifically specifies target indicators for bringing the ratio of deposits to bank liabilities to 50-60 percent and the ratio of deposits to GDP to 25-27 percent by 2025 [1].

The stability of commercial banks' resource base is primarily assessed by their financial performance, and it also reflects the extent to which banks' resource base stability can respond to external and internal influences in a broad sense. Therefore, when assessing the stability of banks' resource base, it is important to pay attention not only to their financial indicators as internal factors, but also to the quality of management in banks (risk management, strategic planning, internal and compliance control), the bank's business model (deposit, credit, interest rate policy, customer and product and service diversification), and as external factors, macroeconomic factors (GDP growth, inflation, exchange rate, Central Bank key interest rate), political factors (political situation in the country, changes in legislation), market factors (competition, IT technologies, FinTech), social factors (financial literacy of the population, demographic changes), and a number of other aspects.

This article highlights the factors influencing the sustainability of the resource base of commercial banks and analyzes both internal factors - indicators of financial sustainability, and external factors based on some macroeconomic indicators.

METHODS

In this article, we use methods such as correlation and stress testing to assess the factors affecting the resource base of commercial banks.

The roots of correlation and stress testing in economic research are linked to the work of several scientists. It is difficult to name a specific scientist, as these concepts and methods have been shaped over time by the efforts of many researchers.

Harry Markowitz as the founder of portfolio theory, he considered the correlation between assets as an important factor in reducing risk through diversification. His work demonstrated the importance of correlation in financial decision-making.

William Sharpe known for the Capital Asset Pricing Model (CAPM). He used correlation to analyze the relationship between risk and return.

Stress testing methods are used to assess and manage the risks of financial institutions. It is difficult to name a specific scientist in this area, as the practice and theory of stress testing have been developed through the collaboration of many economists, financial analysts, and regulators.

In general, many scientists and practitioners have contributed to the development of correlation and stress testing. These concepts play an important role in managing financial risks and ensuring economic stability.

RESULTS

Below we will try to consider the ratio of loans and deposits, one of the main factors influencing the sustainability of the resource base of commercial banks through the implementation of their resources, using the example of Uzbek banks.

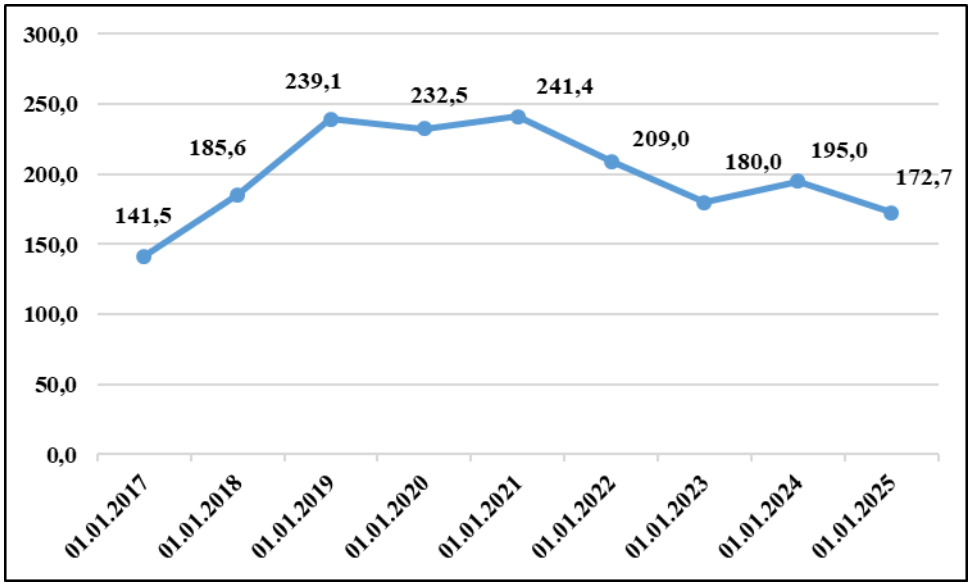

Figure 1. Loans to Deposits (LTD) Ratio, Percent

The share of loans and leasing, which are a source of wholesale financing, in the structure of liabilities of commercial banks of the Republic of Uzbekistan as of 01.01.2020 amounted to 47.5% (deposits 41.1%), as of 01.01.2021 - 49.3% (deposits 37.3%), as of 01.01.2022 - 46.5% (deposits 41.8%), as of 01.01.2023 - 39.1% (deposits 45.4%), as of 01.01.2024 - 40.4% (deposits 43.5%) and as of 01.01.2025 - 35.9% (deposits 47.2%) [2].

Let us consider the ratio of loans and leasing, which are considered a source of wholesale financing in the liabilities of Uzbek banks, and deposits, excluding issued loans.

Table 1. Loan to deposit ratio indicators [2]

Years	Loans, billion soums	Received loans and leases, billion soums	Difference +/-	Deposits, billion soums
1	*2*	*3*	*2-3 (Y)*	*4 (X)*
01.01.2017	52610,5	26785,60	25824,90	37183,2
01.01.2018	110572,1	72819,30	37752,80	59578,7
01.01.2019	167390,6	104378,80	63011,80	70001,4
01.01.2020	211580,5	105252,1555	106328,34	91009
01.01.2021	276974,8	151703,9787	125270,82	114746,9
01.01.2022	326385,6	173750,2697	152635,33	156189,8
01.01.2023	390048,9	186614,4689	203434,43	216737,5
01.01.2024	471405,5	224350,7034	247054,80	241686,6
01.01.2025	533121,2	234667,4926	298453,71	308692,3

From the table above, we first need to select the variables Y and X. As the variable Y, we will take the difference between the indicators of issued loans and received loans and leasing. We select the total amount of deposits as the variable X. Then, using the Pearson correlation coefficient formula, we find the correlation between the variables.

$$r = \Sigma[(X_i - \bar{X}) * (Y_i - \bar{Y}]/\sqrt{[\Sigma(X_i - \bar{X})^2 * \Sigma(Y_i - \bar{Y})^2]}$$

Where
r - the Pearson correlation coefficient;
Xi - each value of variable X;
$\bar{X}$ - the mean value of variable X;
Yi - each value of variable Y;
$\bar{Y}$ - the mean value of variable Y;
Σ - the summation symbol.
After that, we calculate the correlation coefficient as follows.

Table 2. Correlation of the ratio of loans to deposits

Yi	Xi	Yi-$\bar{Y}$	Xi-$\bar{X}$	(Xi - $\bar{X}$)*(Yi - $\bar{Y}$)	(Xi - $\bar{X}$)²	(Yi - $\bar{Y}$)²
25824,9	37183,2	-114149,2	-106797,4	12190838142	11405684647	13030040652
37752,8	59578,7	-102221,3	-84401,9	8627672233	7123680724	10449194883
63011,8	70001,4	-76962,3	-73979,2	5693609641	5472922033	5923196155
106328,3	91009,0	-33645,8	-52971,6	1782269683	2805990407	1132037093
125270,8	114746,9	-14703,3	-29233,7	429831340,4	854609215,7	216186507
152635,3	156189,8	12661,2	12209,2	154583450	149064564,6	160306663,7
203434,4	216737,5	63460,3	72756,9	4617176710	5293566498	4027213180
247054,8	241686,6	107080,7	97706,0	10462426204	9546462436	11466274844
298453,7	308692,3	158479,6	164711,7	26103444986	27129944117	25115784875
∑=139974,1	**∑=143980,6**			∑=70061852389	∑=69781924640	∑=71520234853

According to the results of the calculation of the correlation coefficient given above, that is:

∑=70061852389 / (∑=69781924640 * ∑=71520234853)^0,5 = 0,992

In this case, the correlation coefficient is r = 0.992.

As we know, bank resources are formed not only in the national currency, but also in foreign currency. Therefore, the ratio of foreign currency liabilities to total liabilities is of great importance for the bank due to the risk of exchange rate fluctuations, which can affect the strength of the bank's resource base. Managing this ratio is important to minimize losses from exchange rate risk and meet resource optimization requirements.

The share of foreign currency liabilities in total liabilities in Uzbekistan was 18 percent on January 1, 2020, 16 percent on January 1, 2021 and 16 percent on January 1, 2022, 18 percent on January 1, 2023, 13 percent on January 1, 2024, and 12 percent on January 1, 2025 [2].

The following data will examine deposits attracted and loans granted in foreign currency by Uzbek commercial banks and their impact on the bank balance sheet.

Table 3. Deposits and loans in foreign currency of commercial banks of Uzbekistan, billion soums [2]

Years	Deposits in foreign currency	Loans in foreign currency	Difference
1	***2***	***3***	***2-3***
2023Q1	79965,8	5796,7	74169,1
2023Q2	66704,6	6192,4	60512,2
2023Q3	71171,7	5634,0	65537,7
2023Q4	73 079,2	8651,0	64428,2
2024Q1	68130,6	6406,3	61724,3
2024Q2	74695,2	9754,5	64940,7
2024Q3	77792,9	5561,2	72231,7
2024Q4	77573,4	11969,8	65603,6

We will try to analyze the data from the above table by creating scenarios of the influence of banks on the resource base. We try to create these scenarios taking into account the devaluation and revaluation of the soum against the US dollar.

Table 4. Depreciation of the soum against the US dollar (devaluation)

Case	Loans (X)	Deposits (Y)	Impact on the bank's financial results
Devaluation	The value of loans in foreign currency in soums increases and this causes an increase in assets.	The value of deposits in foreign currency in soums increases, which causes an increase in liabilities.	If ΣXsum>ΣYsum, positive balance, bank makes a profit. If ΣXsum<ΣYsum, negative balance, bank suffers loss.

As a result of devaluation, the volume of foreign currency loans revalued in the national currency will increase, which will reduce the ability of borrowers to repay loans, and may also lead to an increase in overdue loans and a deterioration in the quality of bank assets.

Table 5. Increase in the value of the soum against the US dollar (revaluation)

Case	Loans (X)	Deposits (Y)	Impact on the bank's financial results
Revaluation	The soum value of loans in foreign currency decreases and this causes a decrease in assets.	The value of foreign currency deposits in soums decreases, which causes a decrease in liabilities.	If ΣXsum>ΣYsum, negative balance, bank suffers loss. If ΣXsum<ΣYsum, the balance is positive, the bank makes a profit.

As a result of revaluation, the volume of foreign currency debts revalued in the national currency will decrease, and it will be easier for borrowers to make payments.

Changes in the above scenarios will cause:

1). Revaluation of foreign currency assets and liabilities can directly affect the bank's net profit and capital.

2). Exchange rate changes can indirectly affect interest rates, which in turn affect the bank's income and expenses on interest transactions.

3). In the case of strong exchange rate fluctuations, if the bank does not have sufficient funds in foreign currency to cover its obligations, liquidity risk may arise.

DISCUSSION

When the loan-to-deposit ratio is below 100 percent (1 when the ratio is 1), banks rely on their own deposits to lend to customers without resorting to external borrowing. If the indicator is above 100 percent, it means that banks did not rely only on attracted deposits, but also received other funds based on refinancing from external sources.

In addition, if this ratio is too low, banks may not earn optimal profits. However, if the ratio is too high, banks may not have a sufficient resource base to cover unexpected liabilities or overcome economic crises. If this indicator is high rather than low, it may have a negative impact on the sustainability of the bank's resource base [3].

The LTD ratio may not be as relevant in stable markets. The LTD ratio is rather a risk indicator that helps predict the reaction of a bank's resource base to stressful situations (stress related to the financial position of a particular bank or caused by market factors). The 2008 financial crisis showed that banks with high loan-to-deposit ratios (banks that relied more on wholesale funding) were at risk due to their risky asset base, such as Northern Rock (UK bank).

The correlation coefficient ranges from -1 to +1. If the correlation coefficient is 0, there is no relationship between the factors. A correlation between 0 and 1 is considered to be a direct relationship, a correlation between -1 and 0 is considered to be an inverse relationship, and a functional relationship is considered to exist when r = 1.

The degree of bond density is usually interpreted as follows. If:

up to 0.2 - weak connection;

from 0.2 to 0.4 - a bond weaker than the average density;

from 0.4 to 0.6 - average connection;

from 0.6 to 0.8 - denser than average binding;

From 0.8 to 0.99 - a tight connection.

CONCLUSIONS

In conclusion, it should be noted that there is a close correlation between loans allocated and deposits attracted in Uzbek commercial banks in 2016-2024.

Although experts emphasize that two indicators introduced by the Basel III standard - namely, the Net Stable Funding Ratio (NSFR) and the Liquidity Coverage Ratio (LCR) - are considered novel tools for measuring financial risks, the Loan-to-Deposit Ratio (LTD) remains crucial for initially assessing the stability of banks' resource base and for forecasting their use of deposits.

We believe that the ways to eliminate the existing imbalance under the above scenarios are as follows.

Table 6. Ways to eliminate imbalances in foreign currency deposits and loans as a result of exchange rate changes

Imbalance	Risk	Possible options
According to Scenario 1	Short position	1). Do nothing (the US dollar exchange rate may decline or return to its previous level); 2). Increase the volume of short-term foreign currency loans; 3). Increasing the volume of long-term foreign currency deposits; 4). Using currency risk hedging tools (Buy position).
According to Scenario 2	Long position	1). Do nothing (the US dollar exchange rate may increase or return to its previous level); 2). Increase the volume of short-term foreign currency deposits; 3). Increasing the volume of long-term foreign currency loans. 4). Using currency risk hedging tools (Sell position).

In conclusion, it can be said that exchange rate fluctuations can affect the strength of a bank's resource base. A bank should carefully manage its currency position, the currency composition of its assets and liabilities, use currency hedging instruments, and be prepared for exchange rate fluctuations. The above examples show that higher foreign currency deposits than foreign currency loans make a bank more vulnerable to exchange rate depreciation.

List of used literature

1. Decree of the President of the Republic of Uzbekistan, 12.05.2020. № DP-5992 "On the Strategy for reforming the banking system of the Republic of Uzbekistan for 2020-2025".
2. Statistical Bulletin of the Central Bank of the Republic of Uzbekistan - 2025.
3. Gobat, Jeanne, and Mamoru Yanase, Joseph Maloney. The Net Stable Funding Ratio: Impact and Issues for Consideration. International Monetary Fund, 2014.-P.-5.

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