

STABILITY OF THE BANKING SYSTEM OF UZBEKISTAN: STRESS-TEST RESULTS

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ABSTRACT

This article is devoted to the study of stress-testing practice of commercial banks. In addition, it illustrates how the adoption of Basel III standards by the banking system of Uzbekistan facilitated enhancing of the stability of the banking system. Moreover, the article determines how average-level risk can affect the capital adequacy of banking system. According to the results of the stress-test we concluded that the banking system of Uzbekistan is sustainable and can resist average-level stress.

Keywords: bank capital, stress-test, bank assets, liquidity, stress scenario, capital adequacy

INTRODUCTION

After the global financial crisis banks started to pay more attention to assessing their financial stability through a stress-test. The Basel Committee on Banking Supervision also recommends that supervisory authorities should require banks to conduct a stress-test periodically. This recommendation was adopted by the Government of Uzbekistan and currently Uzbek banks are obliged to conduct this analysis on a quarterly basis. However, this requires the development of an individual approach and a separation of assessment levels. This concerns the assessment and management of various risks. Therefore, it becomes relevant to study possibilities and methods of applying a stress-test to assess the stability of Uzbek banks. The essence of stress-testing is to simulate the possibilities of a stressful situation in which a particular bank or entire banking system of a country may turn out to be. The result will give an idea of the expected volume of losses occurred due to a stressful situation.

Thus the main aim of this research is to determine the financial stability of the banking system of Uzbekistan. To achieve this aim the following tasks have been set up: to reveal theoretical foundations of stress-testing; to study the significance and necessity of the test; possible methods of conducting stress-test; assessment of the current state of banks' financial stability in Uzbekistan. Practical importance of the article is to draw conclusions about the current state of the banks of Uzbekistan and to find out the amount of possible losses in case of stress.

LITERATURE REVIEW

Capital of banks while performing its functions as a protective pillow is currently the source of long-term investments and long-term loans (Shevchuk, 2017). Therefore periodic assessment of the bank's capital analysis through application of the stress-test is considered to be an urgent issue.

Stress-test involves several scenarios of economic development, i.e. estimates many consequences possible in the future (Solntsev et al, 2010). Stress-test can assess the impact of economic outcomes on various indicators of the banking activity, such as profitable assets,

liquidity, credit portfolio structure and other indicators. In addition, this is an optimal way to measure quantitative losses of loans and deposits on the bank's balance (Grigoryan, 2011).

All above-mentioned statements enable the regulator to evaluate the probable loss of the whole bank and to determine the amount of resources required by banks to safely overcome huge losses in the economy (Bezudniy et al, 2010). The Bank's Board of Directors also needs a stress test to keep track of the most vulnerable aspects of the bank's transactions as well as to optimize the performance of the entire bank to improve its sustainability (Bezudniy et al, 2010).

Requirements of the Basel Committee on Banking Supervision which were published in January 1996 highlighted the need for stress testing (Basel Publications, 1996). According to these requirements: "... with the aim of meeting requirements set up for the bank capital in terms of probable market risks, commercial banks must possess a comprehensive stress-testing programme".

Stress-test can be used for the following purposes: (Vinogradov et al, 2011):

- to assess the banks' exposure to risk and to enable development or selection of the appropriate strategy to mitigate these risks;
- to have better understanding of the degree of risk and their composition at banks;
- to assess the ability of banks to resist stress situations in terms of the bank profitability and capital adequacy;
- to determine what losses can banks bear according to the certain scenario and to fix limits for operations performed for these purposes.

The Global Risk Regulation has shown three levels of stress-tests applied by the banks (globalriskregulator.com). Firstly, it deals with the analysis of quality and reliability of a particular loan extended to the population. Results of this stress test are aimed at identifying the weaknesses of several groups of similar credit lines. In this case, main task is to have better understanding of the credit risk structure. Due to stress-test the bank can assess the extent to which a loan can be exposed to risk, how much loss it may cause in case of losing creditworthiness and how it affects the stability of the entire bank.

Next level of stress-testing is intended for the analysis of assets portfolio (globalriskregulator.com). The tools used for such purposes are multi-factor models. VaR, ASRF models can serve as tools for such purposes. This level of stress is frequently used in SCAP and CCAR (Glasserman and Tangirala, 2016).

The high level of stress-test is aimed at evaluating the overall risk of a banking or financial institution and banking system as a whole (Kudryavtseva, 2006). Herein not only the risks associated with a particular loan, but also bank liquidity risks and others are assessed. Scenarios dealing with numerous factors are studied to conduct such large-scope stress-tests.

Bank's managers often ask what stress-test level is used to estimate the bank's stability, and what system the Central Bank finds the most appropriate. Respond to these questions depends on what type of risk the bank would like to assess. William and Roberto (2003) in their research work have described the level and the term of the appropriateness. Stress-test has specific objectives for all methodologies, and requires the use of a certain tool under certain circumstances.

Therefore, at first, it is important to know why each time a stress-test is conducted, and interrelation of which variable parameters the bank wants to evaluate. In addition, negative

scenario of the development of the economic situation should be properly developed as negative effects of the economy have a significant impact on the performance indicators of various banks (William and Roberto, 2003).

Regardless of what level of analysis the bank has chosen, a risk management specialist is required to comply with more than one sequence for a stress-test. First, he must think carefully about why stress-testing should be performed. Second, it is necessary to determine what information is available for stress-test. After that, the bank should determine the risk level which it is optimal and determine conditions for the negative scenario development of the situation, for which estimated amounts of the bank's performance are calculated. In the final step, if the risk is too high, the measures necessary to mitigate it are to be undertaken.

RESEARCH METHODOLOGY

According to the Regulation "On the requirements to the liquidity management at commercial banks" approved by the Central Bank of the Republic of Uzbekistan with the aim of assessing its liquidity commercial banks must conduct stress-test at least once a quarter. Commercial banks in Uzbekistan often use financial sustainability indicators to perform macroeconomic analysis. They include a system of indicators used to assess the current state of the banking system. These indicators are often used as a tool for stress-test. They enable to assess the changes in banking risk structure, identify small banks which expose to risk most of all, as well as determine the necessary volume of capitalization potential required by the banking sector in case of possible stress conditions.

The scenario-based analysis is aimed at analyzing effects of a combination of multiple risk factors as a stress event. Final outcome of stress-test is the assessment of possible losses in a bank or banking sector, capital adequacy ratio and the level of capital deficit in stress situation. Capital deficit is defined as the amount of funds that we do not have enough to meet the minimum capital adequacy ratio in terms of stress (Volovnik et. al., 2011).

We use the following series of estimates to assess capital adequacy. Total amount of assets subject to risk (AASR) is defined as the sum of outstanding balance and off-balance assets with the risk of deducting discounts. The sum of AASR is calculated as it follows:

$$\text{AASR} = \text{Amount of balance and off-balance assets with discounted risks} + \text{amount of operational risks (OR)} + \text{amount of market risk (MR)}$$

Here:

$\text{OR} = (100 / \text{the smallest degree of determined } K1) * (\text{average amount of gross income earned by the bank during last three years} * 1\%);$

$\text{Gross income}_{ei} = (\text{interest income} - \text{interest expenses}) + \text{other income}$

(if gross income equals to zero or has a negative figure once, it is excluded from the chain while calculating an average indicator).

$\text{MR} = (100 / \text{the smallest degree of determined } K1) * (\text{total amount of open currency positions} * 10\%).$

When calculating the total amount of open currency positions, the largest of the absolute sum of general long or general short-term indicators of foreign currencies is taken into consideration.

ⁱ if gross income equals to zero or has a negative figure once, it is excluded from the chain while calculating an average indicator

Thus, the ratio of RWA to the regulative capital should be not less than 10%. The regulative capital adequacy ratio (K1) is calculated according to the following formula:

$$K1=OR/AASR$$

Since January 1, 2018 the smallest level of K1 was fixed at the amount of 13.5%. However, this indicator will be fixed 14.5% beginning from 2019. Capital conservation buffer consists of additional reserves in the amount of 3.0% of its assets with the account of risks.

While conducting stress-test of the banking system of Uzbekistan we analyze assets quality and capital adequacy. The data used to analyze indicators of the financial stability of banks are of a secondary character and based on the open source database of the Central Bank of the Republic of Uzbekistan. Such empirical methods as statistical interpretation, econometric analysis and others applied for risk assessment have been widely used in our research.

RESEARCH ANALYSIS

As a result of reforms implemented in our country the growth rates of economy are steadily increasing. In this process the banking system of the republic is playing a significant role. Banks operate in all spheres of financial services in accordance with modern and innovative requirements. Under conditions of a competition Uzbekistan banking system represents a solid base for the economy. Government support for sustainable and reliable customer service is ensured by the introduction of effective banking supervision mechanism.

When analyzing the stability of bank's capital, main focus is made on the amount of funds that are available for the long-term use. With the aim of ensuring stability of the banks, regulation "On the requirements set for capital supervision of commercial banks" fixed the following normative requirements.

Table 1. Minimal requirements to capital adequacy

Implementation date	Regulative capital	Tier I capital	Ratio of Tier I capital in the regulative capital
01.09.2015	10.0%	7.5%	6.0%
01.01.2016	11.5%	8.5%	7.0%
01.01.2017	12.5%	9.5%	7.5%
01.01.2018	13.5%	10.5%	8.5%
01.01.2019	14.5%	11.0%	9.5%

Source: the requirement of the Central Bank of the Republic of Uzbekistan

In 2017, there have been made considerable efforts to increase capitalization of the banking system, strengthen its liquidity, as well as enhance its stability. In order to maintain stability in conditions of transition to free currency convertibility, banks' authorized capital increased by 655 million USD due to attracting investments into it. As a result, the aggregate capital of commercial banks for January 1, 2018 accounted for 23.725 trillion UZS.

RWA of banks' has exceeded 120 trln. UZS by the results of 2017. In particular, the volume of credits, directed to the real sector of economy in 2017 was over 110 trillion UZS by the beginning of this year. Among them the share of credits extended in national currency accounted for 39.4% and in foreign currency - 60.6%.

Ratio of interest margin to gross income was 32.55% and the interest-free expense ratio to gross income was 59.30%. Ratio of net profit before tax to assets (ROA) declined from

2.00% to 1.87% in comparison with the previous year. The ratio of net profit before tax to capital (ROE) declined from 17.94% to 14.74% comparing with the previous year.

Table 2. Indicators of financial stability of commercial banks, for 2017

Ratio of regulatory capital to RWA	21.63%
Ratio of Tier I capital to RWA	19.41%
Ratio of RWA to total assets	63.9%
Ratio of high-liquid assets to total assets	22.7%
Ratio of liquid assets to total assets	23.63%
Ratio of liquid assets to short-term liabilities	55.65%
Ratio of aggregate capital to total assets	14.24%

Source: Data is provided by the Central Bank of the Republic of Uzbekistan

As the table illustrates the capital adequacy of commercial banks tend to grow and by the results of 2017, this indicator is amounted to 21.63%. It should be noted that currently achieved level of capital adequacy is higher than the requirements of international standards set by Basel III requirements. Tier I capital adequacy indicator also increased from 12.54% to 19.41% and it is considered as an acceptable level.

In order to assess the financial stability of the banking system of the Republic of Uzbekistan by means of stress testing we use a quantitative scenario to moderate stress conditions:

- level of problem credits is higher than those reflected in reports and constitutes 5% of the total amount of credit portfolio and can cause a loss to 5% of the total amount of loans extended;
- due to the investments in insecure enterprises or investments in the unreliable assets, the level of capitalization of banks has declined with the probability of loss of 10% of the invested funds;
- Both the risky assets of banks and the scope of losses have increased by 20%.

According to the result of the medium-term stress-test, capital adequacy of the banking system of Uzbekistan decrease by 3.79% and amounts to 18.48%. If such a stress situation occurs, fixed capital adequacy declines to 17.84%.

According to reports, capital adequacy was 21.63% in 2017. In addition, non-performing loans accounted for 3.73% of the total credit portfolio of commercial banks. Reserve fund for repayment of non-performing loans amounted to 1 670 billion UZS. According to the result of stress-test, it is necessary to replenish this reserve fund by 3 753.35 billion UZS. In addition, banks' Tier I capital adequacy declines from 19.41% to 15.62%. Also, it is possible to note that the share of investments and securities (2.5%) is low in the structure of assets of commercial banks, but the quality of these assets can be considered as acceptable.

So the result of general stress-test, as of January 1, 2018, status of commercial banks of the Republic of Uzbekistan can be considered as stable. At the same time, in terms of capital reserve, commercial banks are able to withstand middle-term crisis. Capital adequacy of commercial banks maintains upper level from the international standards and exceeds the minimum level set by the Central Bank.

Table 3. Results of stress-testing the banking system of Uzbekistan, in bln. UZS

Risk-weighted assets	106 510.9
Total capital	23 725.0
Fixed capital	23 041.7
Tier I capital	20 676.0
Additional capital	68
Adequacy of fixed capital	21.63%
Tier I capital adequacy	19.41%
Credit portfolio	108 467.0
Non-performing loans	4 042.3
Reserves on the credit portfolio	1 670
Interest on reserves by loans	1.54%
Investments in enterprises	4115
Reserves on investments in enterprises	123
Interest on reserves by investments	2.98%
Reserves on credit placements by stress-test	5 423.35
Credit reserves by report	1 670
Reserves necessary for credit losses	3 753.35
Reserves on investments by stress-test	411.5
Reserves on investments by report	123
Reserves necessary by investments	288.5
Additional funds to replenish reserves under stress conditions	4 041.85
Adequacy ratio of the fixed capital after stress	17.84%
Profit before replenishing reserves	-1 778.85
Adequacy of Tier I capital after stress	15.62%
Result of the scenario by the stress-test	-3.79%

CONCLUSION

Result of stress-testing banking system of the Republic of Uzbekistan enable to draw the following conclusions:

1. Bank capital should perform not the function of the source for active operations but the role of protective capital;
2. Stress-test enables to illustrate the scope of possible losses;
3. Stress-test can be performed for three purposes: to determine the quality of loans, to study the quality of the credit portfolio, to assess either a certain bank or the entire banking system;
4. In case of occurrence of middle-level stress situation, capital adequacy will reduce by 3.79%;
5. It will be necessary to find additional 4 041.85 billion UZS to cover the losses occurred due to the stress;

6. On the basis of the result of the stress-test it is possible to make a conclusion that the banking system of Uzbekistan is stable and can resist medium-level stress conditions.

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