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Methodological Approaches to Determining the Financial Stability of Commercial Banks and the Central Bank Assessment Model

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Abstract. The article is devoted to the analysis of credit institution stability and includes several variants of methods, which have been developed by supervision authorities and international financial rating agencies and central banks of developed countries. It is emphasized that today there are no unified and generally accepted methods for estimation of financial stability of commercial banks.

Key words: credit institution, central bank, financial soundness, capital.

Introduction. Financial stability is a prerequisite not only for price stability, which is the policy objective of the central bank, but also for the healthy development of the economy. This is because financial instability entails high costs for the economy, since the volatility of price variables in financial markets increases, and financial institutions or corporations can go bankrupt. In addition, economic development during such a period may be limited, since it is difficult for economic agents to make rational decisions and the efficiency of resource allocation is reduced.

Since the 1980s, many countries around the world have benefited from the rapid growth of the financial industry thanks to the progress of financial liberalization. At the same time, however, they have experienced periods of sharp economic slowdown due to severe economic costs caused by financial instability or financial crises.

Against this background, many countries began to pay great attention to financial stability in the implementation of their policies. The focus on financial stability is growing as new factors have emerged recently that could cause financial instability, including the strengthening of ties between countries in the financial sector and the rapid development of complex financial instruments.

Financial stability can be defined as "a state in which the financial system is not unstable." It can also mean a state in which the three components of the financial system – financial institutions, financial markets, and financial infrastructure – are stable.

Stability of financial institutions" means a state in which individual financial institutions are sufficiently stable to adequately perform their financial intermediation functions without the assistance of external institutions, including the state.

Stability of financial markets" means a state in which there are no serious violations of market operations and a significant deviation of prices for financial assets from fundamental economic indicators, which allows economic agents to confidently attract funds and operate with them.

Stability of financial infrastructure" means a state in which the financial system is well structured to ensure the smooth functioning of market discipline, and the financial network security and payment and settlement system work efficiently.

Financial stability can be more broadly defined as "a state in which the financial system can unhindered facilitate real economic activity and is able to correct financial imbalances resulting from shocks" [1].

Material and methods. In the study of this topic, a systematic analysis of the literature was carried out, as well as methods of using various financial instruments of the central banks of developed countries of the world in the study of the scientific and theoretical foundations of the financial stability of commercial banks. The scientific conclusions of the research conducted by scientists in this field were also studied, and independent approaches were formed. The analysis used the materials of the official websites of commercial banks and statistical data of the Central Bank. Bank of the Republic of Uzbekistan.

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Outcomes. There are many definitions of financial stability, most of which have in common that financial stability is the absence of system-wide episodes in which the financial system does not function (crises).

A stable financial system is able to effectively allocate resources, assess and manage financial risks, maintain employment levels close to the natural level of the economy, and eliminate relative fluctuations in the prices of real or financial assets that will affect monetary stability or employment. The financial system is in a range of stability when it dispels financial imbalances that arise endogenously or as a result of significant adverse and unforeseen events. When stable, the system absorbs shocks mainly through self-correction mechanisms, preventing adverse events from having a devastating impact on the real economy or other financial systems. Financial stability is of paramount importance for economic growth, as most transactions in the real economy are carried out through the financial system.

The true value of financial stability is best seen in its absence, during periods of financial instability. During such periods, banks refuse to finance profitable projects, asset prices deviate excessively from their intrinsic value, and payments may not arrive on time. Severe instability can lead to bank flight, hyperinflation, or a stock market crash. This can greatly shake confidence in the financial and economic system [2].

Financial stability may seem like a confusing concept, but it's just a way of describing the financial system as it performs its core functions. With a stable financial system, the wheels of the economy continue to spin even when conditions become challenging [3].

In the Bank of England, the stability of the financial system is regulated by two bodies: the Financial Policy Committee (FPC) and the Prudential Regulation Authority (PRA).

FPCs are the mechanics of the financial system working to make sure everything goes smoothly. They identify risks and deficiencies in the financial system, assess how serious they can become, and take measures to eliminate or reduce them.

PRA are security engineers who regulate and supervise financial institutions.

There are three elements that contribute to financial stability:

1. A reliable mechanism must have a strong and well-thought-out structure. Financial institutions are expected to meet very high standards of sustainability. This is achieved by establishing strict rules that are checked by the PRA. The new rules are aimed at encouraging honest behavior and limiting excessive risk when using other people's money.

2. Financial institutions should be able to adapt their level of resilience to new risks that may evolve. That's why banks undergo annual stress tests to make sure they have enough financial resources to provide financial services in both bad and good times.

3. FPC has developed tools to dampen and deter shocks when they occur so that they are not aggravated. For example, there are limits on the amount of mortgages that lenders can approve and that are 4.5 times or more the amount of the borrower's income. This helps to reduce the risks associated with household borrowing in the event of a downturn in the economy [3].

Banks' resilience can be assessed using metrics such as the ratio of non-performing loans to total loans (NPL ratio), capital adequacy ratio (CAR), and average return on equity (RoE). It is worth noting that in the banking system of the Republic of Uzbekistan, these indicators are used for the stability of the financial stability of commercial banks established by the Central Bank of Uzbekistan [4].

The NPL non-performing loan ratio refers to the nominal value of non-performing loans to all loans. According to the EU definition, a non-performing loan is a loan whose payments are not paid for more than 90 days. The coefficient shows the degree of deterioration in the quality of loans issued by banks. The higher the ratio, the worse the quality of assets and, accordingly, the higher the expected losses.

The capital adequacy ratio (CAR) shows the solvency of banks. It correlates the amount of regulatory capital, i.e. capital instruments recognized by banking regulation, with risk-weighted assets. This is an indicator of the ability of banks to absorb losses. The higher the ratio, the more banks can absorb losses without threatening their solvency.

The RoE ratio correlates the net income of banks (i.e. profit after taxes) and total capital. It is an indicator of the overall profitability of banks. High profitability implies that banks are in a favorable position to increase their capital buffer in the near future, namely through retained earnings.

The World Bank recommends the use of "Firm-level stability measures" and "Systemic stability measures" to assess the financial stability of commercial banks [2].

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Indicators of stability at the firm level. The generally accepted measure of stability at the level of individual institutions is z-score. It explicitly compares buffers (capitalization and returns) with risk (volatility of returns) to measure a bank's solvency risk. Z is defined as $z \equiv (k+\mu)/\sigma$, where k is equity as a percentage of assets, μ is the return as a percentage of assets, and σ is the standard deviation of the return on assets as a measure of return volatility. The prevalence of z-score is due to the fact that it has a clear (negative) relationship with the probability of insolvency of a financial institution, that is, the likelihood that the value of its assets will become less than the value of its debt. Thus, a higher z-score means a lower probability of insolvency [5].

The z-score indicator has a number of limitations as a measure of financial stability. Perhaps the most important limitation is that z-scores are based solely on accounting data. Thus, they are only as good as the underlying accounting and auditing system. If financial institutions are able to smooth the reporting data, a z-score may give an overly positive assessment of the stability of financial institutions. In addition, the z-score measure looks at each financial institution separately, potentially overlooking the risk that one financial institution's default could result in losses for other financial institutions in the system. The advantage of the z-coefficient is that it can be used for institutions for which more complex market data is not available. In addition, z-coefficients allow you to compare the risk of default in different groups of institutions, which may differ in the form of ownership or purpose, but face the risk of insolvency.

Other approaches to measuring stability at the institution level are based on the Merton model. It is regularly used to determine a company's ability to meet its financial obligations and assess the overall probability of default. Merton's model (also called the asset value model) treats an institution's equity as a call option on its assets, taking into account the volatility of those assets. Put-call parity is used to determine the value of a "put", which is represented by a company's credit risk. Thus, the model measures the value of a firm's assets (taking into account volatility) at the moment when debt holders "exercise their put option" while waiting to be repaid. The model defines default as the moment when the value of a firm's liabilities exceeds the value of its assets (in different iterations of the model, the level of assets/liabilities required for the occurrence of a default is set at a different threshold level). Merton's model allows you to calculate the probability of credit default for a firm [6].

Merton's model was modified in subsequent studies to reflect a wider range of financial activities using credit default swap data. For example, it is part of the KMV model that Moody's uses both to calculate the likelihood of credit default and as part of its credit risk management system. Distance to Default (DD) is another market indicator of corporate default risk based on the Merton model. It measures both solvency risk and liquidity risk at the company level.

Indicators of system stability. To measure system stability, a number of studies attempt to aggregate firm-level stability measures (z-score and distance to default) into a system-wide stability assessment by averaging or weighting each indicator by the relative size of the institution. The disadvantage of these aggregates is that they do not take into account the interconnectedness of financial institutions, that is, that the failure of one institution can be contagious.

As a measure of systemic risk for large financial institutions, the probability of defaulting "first to default", or the probability of observing one default among a number of institutions, was proposed. It uses risk-neutral default probabilities from credit default swap spreads. Probability, as opposed to a measure of distance to default, recognizes that defaults among a number of institutions can be related. However, studies focused on the probability of default tend to overlook the fact that the bankruptcy of a large institution causes more excitement than a small one.

Another assessment of the stability of the financial system is the Systemic Expected Shortfall (SES), which measures each institution's individual contribution to systemic risk. SES takes into account individual leverage and risk-taking and measures the externalities of the banking sector for the real economy when these institutions fail. The model is particularly good at determining which institutions are systemically important and, in the event of their collapse, will have the greatest impact on the economy as a whole. One disadvantage of the SES method is that it is difficult to determine when systemically important institutions may fail.

In practice, in order to assess the financial stability of banks, the following coefficients of financial stability are used:

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Coefficient of autonomy (financial independence). This coefficient shows the degree of dependence of the company on foreign loans. The value of this coefficient is lower the more loans the organization has and the higher the risk of insolvency:

CA = Equity / Balance Sheet Currency (1).

Capital adequacy ratio. This ratio indicates the extent to which a bank's investments in risky assets are protected by its own capital:

(Capital/Risk-Weighted Assets) * 100% (2).

The coefficient of stability of the resource base is calculated by the formula:

((Total Liabilities – Demand Liabilities) / Total Liabilities) * 100% (3).

Maneuverability coefficient. This coefficient shows how much of the organization's own funds are in mobile form, which allows them to be relatively freely disposed of. This coefficient is calculated by the formula:

KM = SOS / equity = (equity – non-current assets) / equity (4).

Coefficient of industrial property. This ratio allows you to estimate the structure of the organization's facilities. It is calculated by the formula:

QIPS = (fixed assets + capital investments + intangible assets + inventories) / balance sheet currency. (5).

Asset utilization rate. It is calculated as follows:

(Income-Generating Assets/Total Assets) * 100% (6).

The loan debt quality ratio has the following formula:

((Loan debt – estimated RPVS) / loan debt)

* 100 % (7).

Interest coverage ratio. This coefficient characterizes the degree of protection of creditors from non-payment of interest on the loan provided and shows how many times during the reporting period the organization earned funds to pay interest on loans. This indicator also makes it possible to determine the permissible level of reduction in profit used to pay interest:

PPC = profit before taxes and interest on loans / interest on loans (8).

Equity accumulation ratio. This coefficient characterizes the share of earned profit directed to the development of core activities. This coefficient is calculated by the formula:

KNCC = (Reserve Capital + Retained Earnings) / Equity (9).

Discussion. In 2020, the banks of Uzbekistan issued loans in the economy in the amount of $ 127 trillion As a result of an increase in the loan portfolio by 31%, the capital adequacy ratio of the banking system decreased from 23.5% at the beginning of 2020 to 18.4% as of January 1, 2021.

The 5 percentage point decrease in capital adequacy was due to the fact that the increase in asset-related risk (42%) was more significant than the growth in the regulatory capital of banks (11%), due to high credit growth rates. The capital adequacy ratio decreased by 6 percentage points to 18% for state-owned banks, while for private banks it increased by 1 percentage point to 19%. A significant decrease in capital adequacy in banks with a share of the state is a consequence of the fact that the volume of loans issued in these banks increased more rapidly than additional capital was formed.

The Tier 1 capital adequacy ratio, which is the main source of compensation for losses on banks' current operations and banks' resilience to sudden stresses, decreased by 4 points compared to the beginning of 2020 and reached 15% at the reporting date (the capital adequacy ratio is set at 10%).

In the period up to 2020, the share of highly liquid assets increased by 3 percent compared to the beginning of the year and reached 14 percent. This provision is due to the growth of highly liquid assets by 19.5 trillion. soums (63%).

The growth in the share of highly liquid assets was ensured by an increase in the structure of government bonds assets by 2.1 trillion. soums (2 times), cash at the cash desks of banks for 3.2 trillion. soums (49%), with

$2.5 trillion in central bank revenues. soums (by 17%), funds in other banks by 8.3 trillion. soums (98%).

In order to maintain the liquidity of banks during the pandemic, the Central Bank introduced the practice of lending to commercial banks through the provision of irrevocable credit lines (which are fully satisfied by

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the Central Bank at the request of commercial banks for the specified period), and in accordance with this instrument, agreements on the allocation of funds in the amount of $ 3.4 trillion were signed. Sums [8].

Findings. Banks, being an important component of the national economy, ensure its stability. The effective functioning of the banking sector has a significant impact on the development of public relations in general. In this context, the financial stability and reliability of each bank and the banking system as a whole, with special attention to state regulators. The Central Bank, as a supervisory body, constantly monitors various aspects of the banking business.

The functioning of credit institutions in the modern banking environment is largely carried out through the requirements of banking legislation, business practices, ethical standards in the system of self-regulation, the use of advanced management methods in the banking sector.

Thus, considering the proposed directions for the development of the system for ensuring the financial stability of commercial banks as an example, both the effective development of banking activities directly in the banking services market and the development and implementation of new banking products can be carried out, which allows to form a competitive and customer-oriented, stable and stable bank and contributes to the development of profits and growth of the bank's profits as the most important indicator sustainability of his business.

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