







# “Operational control over the financial stability of banking”

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# OPERATIONAL CONTROL OVER THE FINANCIAL STABILITY OF BANKING

## Abstract

Maintaining proper financial stability of each banking institution is one of the main tasks facing the banking system of Ukraine. This enables operational control over the financial strength of banking activities.

The purpose of the article is to develop recommendations on the operational control of financial stability of banking and to test them using banking institutions in Ukraine as an example.

To execute operational control over the financial stability of banking, economic standards of banking regulation are grouped under the "at least" or "not exceeding" principle. To determine their change over time, Shewhart control charts are proposed.

The recommendations were tested through the example of the Ukrainian banking institutions (with state, foreign and private capital). It was found out that in 2017–2019, the following three economic standards of banking regulations were not met: regulatory capital adequacy, high credit risk, and average investments; besides, there were two standards at the limit of control value: the ratio of regulatory capital to total assets and the maximum amount of credit risk per counterparty.

To improve the financial status of banking institutions, it is recommended to take organizational and financial measures to change the average value of the relevant economic standards for banking regulation to a level that ensures financial stability.

## Keywords

stability, banking supervision, operational control, Shewhart control charts, economic standards

## JEL Classification

G21, G24

## INTRODUCTION

The banking system of Ukraine has a deficit of working capital, and especially investment assets, due to the loss of banking institutions' ability to mobilize long-term resources. Today, banking institutions meet primarily the current payment needs of business entities. They haven't got a stable resource base to meet the investment needs of the real economy of Ukraine. This leads to their limited impact on shaping the logistics base of the economy. Strong banking institutions ensure the excess liquidity accumulation, reduce the level of the economy shadowing, and contribute to the long-term lending development, which serves as a catalyst for economic growth and increase in the population well-being. Banking control over financial stability allows assessing the success of meeting the goals set by the banking system, i.e. comparing actual achievement with indicators set by regulatory and governing bodies.

## 1. THEORETICAL BACKGROUND

Banking control over financial stability implies holistic and continuous supervision over banks' activities (Khoruzhyi, 2015; Shpakovskyi, 2016). This is the activities of banks aimed at prevent-

ing, fixing and eliminating deficiencies and violations, as well as providing legal assistance to enterprises, institutions, organizations and citizens during banking operations and when using banking services (Dotsenko, 2019; Kuznetsova, K. Kuznetsov, & A. Kuznetsov, 2019).

Not only banking institutions exercise banking supervision over financial stability, it is also the responsibility of public financial control and governance bodies. In Ukraine, they include the Accounting Chamber of Ukraine, the State Fiscal Service of Ukraine (planned to be renamed as the State Audit Service), and the National Bank of Ukraine.

Banking financial stability is also an issue for law-enforcement agencies. This is necessary to prevent and stop banking offenses. In Ukraine, the Antimonopoly Committee (the Anti-Corruption Bureau in the long run) plays a special role in regulating banking.

Each of the above bodies of financial control and governance sets certain goals during the audit that may differ significantly and even conflict with each other (Nabok, 2011; Prymak, 2017; Seliverstov, 2015). During inspections, only the National Bank of Ukraine and audit firms aim to ensure the financial stability of the banking system, that is, contribute to achieving one of the main goals of banking.

Banking activity, unlike operations of other entities, has a powerful (by volume) public information base, which displays financial and statistical reporting, information on monetary aggregates, absolute indicators of the volume of certain banking products, discount rates of the National Bank of Ukraine, the value of bank loans and deposits (interest rates), the buying and selling rates of currencies and banking metals, inflation rate (Ursulenko, 2014; Senyshch, 2019; Shumska & Piatnytskyi, 2015). The lack of the operational control procedure does not allow public financial control and governance bodies and banking institutions to predict potential risks, determine their scope and level. This prevents the proper quality of banking control over financial stability, reduces the quality of corporate governance and the implementation of business strategies (Azarenkova, Holovko, & Smyrnov, 2011; Bodretskyi, 2018;

Morozova, Pasechnik, Malafeyev, Galushko, & Goikhman, 2019). Therefore, special attention is paid to exercising operational banking control over financial stability.

Operational control over financial stability of banking activities involves preventing and timely detecting deviations of the controlled object's real situation from the normative, planned and other characteristics that make its functioning possible (Viadrova & Nahai, 2015; Kleftouri, 2017).

Harbar (2018) argues that the operational control over financial stability of banking activities prevents possible misuse in obtaining and spending funds, promotes observing financial discipline, timely financial and monetary settlements, and must be in the owner's interests.

Tarnavskyi (2012) believes that the operational control over financial stability of banking should be carried out by timely assessing the correctness, legality and feasibility of the expenses incurred, the income received, and the entities' settlements.

Thus, operational control over the financial stability of banking is the activities or coordinated actions of individual stakeholders aimed at forming sufficient information for making current management decisions; this, all totaled, shapes a system of continuous observation, review and verification of the form, status and level of banking operations, procedures and metrics as planned or required.

Operational control is executed in the small time intervals, the length of which depends on the duration of the individual controlled processes. However, such processes may have other phenomena, events, and operations that also need to be verified during their implementation. This provides effective and appropriate operational control. Therefore, operational control of the financial stability of banking activities is a fast management tool that is present at all stages of achieving economic goals. The methods of its implementation depend on the specific needs of management, which determines the scope of its application.

Based on the purpose of operational control, the study defines the main tasks of operational control of banking activities' financial stability (Brauers, Ginevičius, & Podviezko, 2014):

- ongoing monitoring of business operations and factors affecting them during their implementation;
- timely warning of all kinds of deviations that will reduce the probability of obtaining the results;
- prompt detection of actual deviations.

Operational control over the financial stability of banking is ensured by united efforts of all people interested in the quality of its conduct. These persons are only bound by the achievement of specific business results, enabling them to carry out an on-the-spot audit of the fulfillment of their functional tasks and responsibilities. They work independently, which contributes to impartiality and quality of information about the true situation with business transactions and events.

It is recommended to use Shewhart charts to effectively control the financial stability of banking activities. These charts allow the upper and lower control limits to be determined, and the mean of the process and its variability are not defined.

The use of Shewhart control charts is regulated by the ISO 8258-2001 (2003) standard. They were first used to analyze the stability of business processes (Shewhart, 1931).

Björn (2003) defines a control chart as a graphical tool that allows timely influencing on the process under study to maintain it within certain limits. According to the control charts, the change in the indicator values over time is statistically controlled if its variability is within certain limits. Therefore, the statistical process management is to ensure and maintain processes at an acceptable stable level, which guarantees its compliance with established requirements.

For the Shewhart chart, sample data are used that are obtained in approximately equal intervals. The intervals are set according to the characteristics of the process being studied. Usually, the chart has a center line that corresponds to the reference value of the characteristic. When assessing whether the process is statistically controlled, the arithmetic mean of data considered is usually chosen as a

standard. The Shewhart chart has two control limits (defined statistically) relative to the center line, namely the upper control limit and the lower control limit. Determining their quantitative value is the subject of special statistical research.

The Shewhart chart draws control limits in such a way that almost 99.7% of possible values are between the upper control limit and the lower control limit. That is, the ISO 8258–2001 standard requires the three-sigma rule. Quite often, on the control chart, the limits are defined even at the distance of two sigmas. These limits are called precautionary. So any value that goes beyond these limits can serve as a warning that the process ceases to be statistically controlled. If the process values go beyond the upper or lower control limits, then the process begins to destabilize. In general, the document (Shewhart, 1931; Björn, 2003) identifies two types of variability.

The first type is random variability due to accidental causes (also known as ordinary causes). It is caused by many reasons that are constantly present and difficult to detect. Each of these reasons accounts for a very small proportion of the overall variability and none of them is significant in itself. However, the sum of all these reasons is measurable and is considered to be the intrinsic essence of the process. Disabling or reducing the impact of ordinary causes requires management decisions to allocate resources for process and system improvements.

The second type of variability is a real change in the process. They may be due to some underlying causes that are not inherent in the process internally and can be eliminated, at least theoretically. These reasons are considered as non-random or special causes of change. These may include insufficient material uniformity, tool breakage, personnel qualification, failure to comply with procedures, poor production or control equipment efficiency (Basel Committee on Banking Supervision, 2019).

Hubar (2012) considers the construction of the Shewhart chart appropriate to analyze economic processes, in particular, the indicator “Time to respond to a client’s request”. The method of its construction meets the requirements of the ISO 8258-2001 standard. The author concludes that analyzing the reasons for exceeding this indicator only when

it goes beyond the upper control limit significantly shortens the process of analysis of the company's activity and increases its effectiveness because the company management focuses only on the most important cases of deviation from its average value (Hubar, 2012).

Tkachenko and Kharchenko (2015) consider Shewhart charts expedient for the individual values of non-performing loans in banks' lending operations. The methodology for constructing the Shewhart chart is standard, but its use for a specific research purpose requires some attention. Thus, Tkachenko and Kharchenko (2015) examined the value of this indicator at one date in many banks and identified those banks for which this indicator exceeded the upper control limit. It is not clear from the study text whether there is a regulatory critical value for this indicator. In its absence and the absence of any influence on the bank activity at the legislative level, the construction of the Shewhart chart loses much of its effectiveness.

According to Shvets (2017), the National Bank of Ukraine can use the results of this study to deter-

mine its regulatory policy. Therefore, it is appropriate to implement Shewhart charts to promptly control the financial stability of banking activities.

The purpose of the paper is to develop recommendations on the operational control over financial stability of banking activities and to test them using banking institutions of Ukraine as an example.

## 2. RESULTS

Tables 1 and 2 provide economic standards of operational control over the financial stability of banking activities that are unilaterally limited under the "at least" or "not exceeding" terms.

Figures 1-11 present Shewhart charts for the process of changing the actual values of economic standards for financial stability of banking over time.

Using the criteria for maintaining statistical variability, one can conclude that the evolution of economic standards for banking activity is steady for all indicators except H4 (the instant liquidity ra-

**Table 1.** Economic standards for operational control over the banking activities' financial stability that are unilaterally restricted under the "at least" term or ( $\geq$ )

Source: Grouped according to Methods of Calculating Economic Standards to Regulate Banking Activity in Ukraine approved by the National Bank of Ukraine (2019).

The ratio number	The ratio name	Restriction statement	Type of restriction
Ratio 2	Regulatory capital adequacy	At least 10%	$\geq$
Ratio 3	Regulatory capital to total assets	At least 9%	$\geq$
Ratio 4	Instant liquidity	At least 20%	$\geq$
Ratio 5	Current liquidity	At least 40%	$\geq$
Ratio 6	Short-term liquidity	At least 20%	$\geq$

**Table 2.** Economic standards for operational control over financial stability of banking activities that are unilaterally limited under the "not exceeding" term or ( $\leq$ )

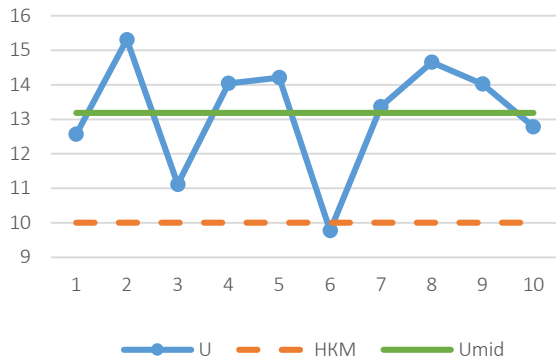
Source: Grouped according to Methods of Calculating Economic Standards to Regulate Banking Activity in Ukraine approved by the National Bank of Ukraine (2019).

The ratio number	The ratio name	Restriction statement	Type of restriction
Ratio 7	Maximum credit risk per counterparty	Not exceeding 25 %	$\leq$
Ratio 8	High credit risk	Not exceeding the eightfold amount of regulatory capital	$\leq$
Ratio 9	High loans, guarantees and sureties given to one insider	Not exceeding 5%	$\leq$
Ratio 10	High aggregate loans, guarantees and sureties given to insiders	Not exceeding 30%	$\leq$
Ratio 11	Investment in securities separately for each institution	Not exceeding 15%	$\leq$
Ratio 12	Total investment	Not exceeding 60%	$\leq$

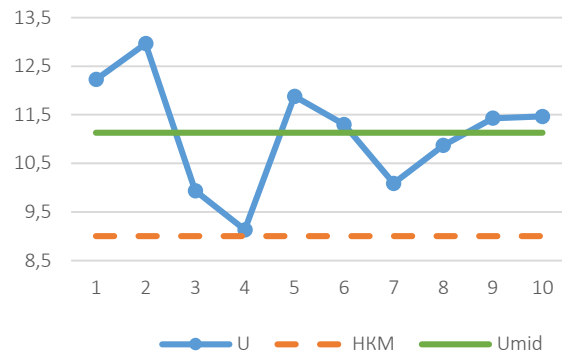
tio). It should be noted, however, that the stability of the process doesn't always equal the reliable operation of a bank.

Figures 1-11 show that during 2017–2019, H2, H6, H8, and H12 ratios were not observed and H3 and H7 were at the control value limit.

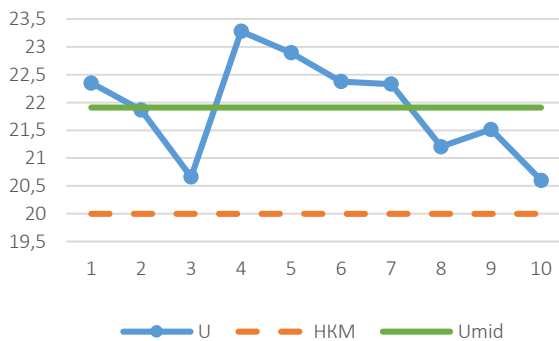
Source: Developed according to the public quarterly financial statements of Ukrainian banking institutions (with state, foreign and private capital) for 2017–2019.



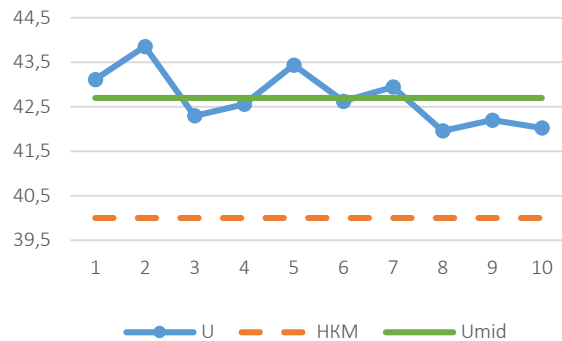
**Figure 1.** The Shewhart chart for the H2 (regulatory capital adequacy) evolution



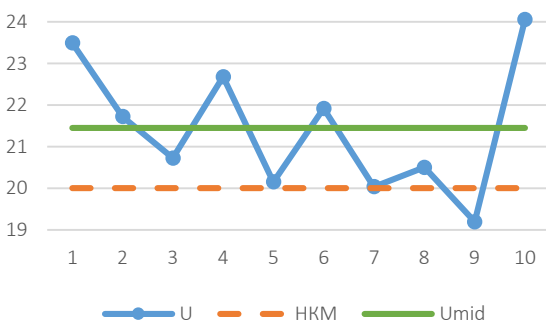
**Figure 2.** The Shewhart chart for the H3 (regulatory capital to total assets) evolution



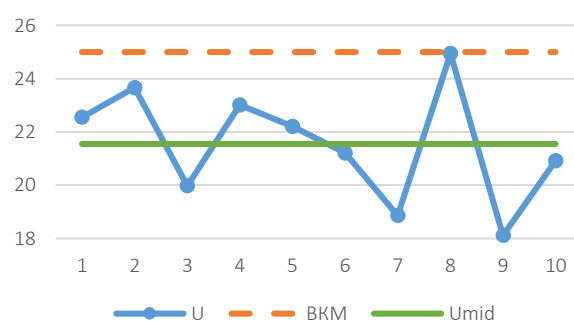
**Figure 3.** The Shewhart chart for the H4 (instant liquidity) evolution



**Figure 4.** The Shewhart chart for the H5 (current liquidity) evolution

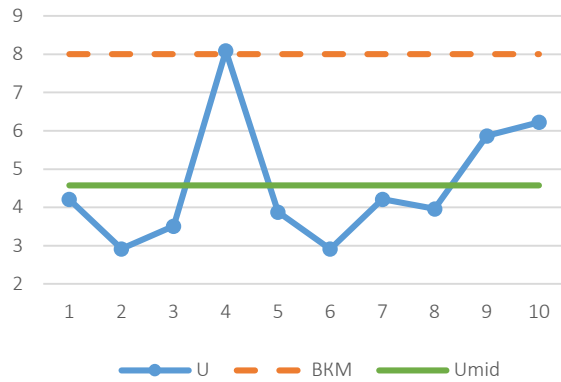


**Figure 5.** The Shewhart chart for the H6 (short-term liquidity) evolution

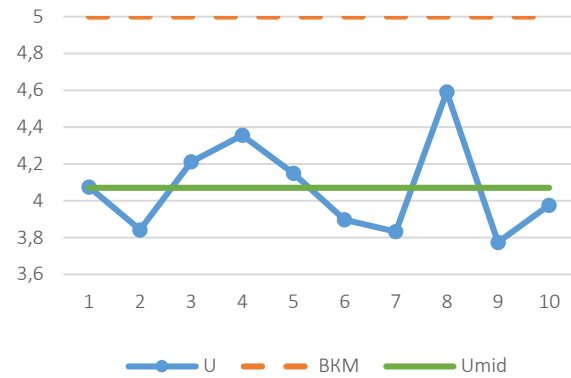


**Figure 6.** The Shewhart chart for the H7 (maximum credit risk per counterparty) evolution

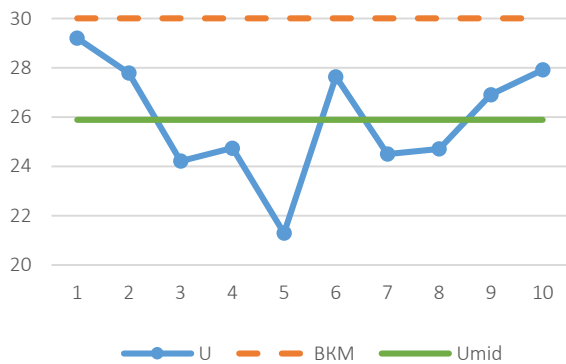




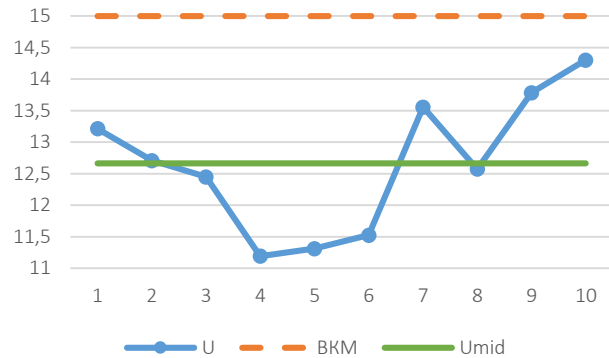
**Figure 7.** The Shewhart chart for the H8 (high credit risk) evolution



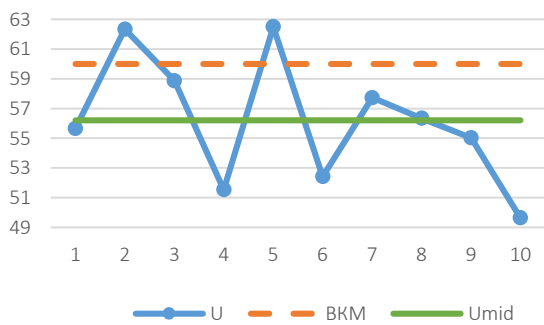
**Figure 8.** The Shewhart chart for the H9 (high loans, guarantees and sureties given to one insider) evolution



**Figure 9.** The Shewhart chart for the H10 (high aggregate loans, guarantees and sureties given to insiders) evolution



**Figure 10.** The Shewhart chart for the H11 (investment in securities separately for each institution) evolution



**Figure 11.** The Shewhart chart for the H12 (total investment ratio) evolution

## CONCLUSION

During 2017–2019, three standards were not complied with: regulatory capital adequacy, high credit risk, and total investment ratios. There were two ratios at the limit of the control value: the regulatory capital to total assets ratio and the maximum credit risk per counterparty ratio. To ensure compliance with the standards, the financial management of a banking institution must take organizational and financial measures to change the average value of the relevant standards to a level that ensures its financial stability.

Since the Shewhart chart-based recommendations on the operational control over the banking activities' financial stability rely on the public financial statements of Ukrainian banks that meet the International Standards, it can be used not only by Ukrainian banks, but also by other countries. This will identify problematic aspects of banking, ensure the timeliness and effectiveness of its planning activities, and focus on its optimizing considering risks and profitability.

However, operational control reflects only part of the overall banking management system. Forecasting and planning of banking activities are an important basis for the bank development. First of all, it involves drawing up plans and forecasts of banking activities. Risk assessment and inseparable combination of individual and mass service for different customer groups are important as well. This requires the development of a banking forecasting and planning methodology that will enable decisions to be taken to ensure the efficiency of banking operations in the future.

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