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IDENTIFICATION OF BANKING RISKS AND THEIR IMPACT ON FINANCIAL STABILITY

ABSTRACT

The article is devoted to deepening the theoretical and methodological foundations of the study of banking risks and their impact on financial stability.

Based on the generalization of the results of scientific research, the essence of the concepts "financial stability", "banking risks" was specified. Methodological approaches to the identification and classification of banking risks are substantiated.

The study made it possible to distinguish between the concepts of financial stability and the financial fortitude of the banking system. It is emphasized that financial stability is a dynamic characteristic of the banking system, while financial fortitude reflects its current, static state.

In the article, the types of risks inherent in the banking system are specified, and the classification features that allowed identification of the main risks that have the greatest impact on financial stability are identified.

It has been established that in modern conditions, a significant threat to financial stability can be posed by a sharp deterioration of conjuncture in the global financial and/or commodity markets, which is transmitted to the banking system; "overheating" of one of the segments of the domestic financial market; a speculative attack on the national currency for keeping its exchange rate effectively pegged to the US dollar and deterioration of the trade balance; the crisis of the public finances, etc.

Keywords: risk, banking risks, systemic risks, financial stability, classification

JEL Classification: B40, D81, E44

INTRODUCTION

The main task of the modern world economy is to ensure the financial stability of national and global financial markets, without which it is impossible to achieve high rates of economic growth and reliable functioning of the financial sector. The instability of the macroeconomic situation negatively affects the banking system, its fortitude and stability, leads to a sharp increase in problem loans in bank portfolios, deterioration of capital quality, and causes a liquidity crisis.

Performing the role of financial intermediaries in the economy, banks can in a certain way provoke financial shocks caused by certain types of risks that may arise in the banking system.

LITERATURE REVIEW

Both theoretical scientists and practical economists, representatives of management, academic and business circles of different countries, united in the Financial Stability Forum, tried to define the concept of financial stability. However, there is still no single definition of "financial stability" on an international scale.

Such foreign scientists as N. Wellink, W. Duisenberg, P. Kallaur, E. Crockett, E. Large, F. Mishkin, H. Minsky, J. Solarzh, R. Ferguson, M. Foote, J. Chant, A. Schwartz, J. Schinasi and others (Table 1).

Table 1. Views of foreign economists on the essence of the concept of "financial stability". (Source: compiled by the author based on a generalization [1])

№	Author	Definition
1.	John Chant, Special Adviser at the Bank of Canada	Financial instability is a situation in financial markets that hinders or threatens economic activity, financial stability is the opposite phenomenon
2.	Andrew Crockett, Head of the Financial Stability Forum - Bank for International Settlements	«...Define financial stability as an absence of instability...a situation in which economic performance is potentially impaired by fluctuations in the price of financial assets or by an inability of financial institutions to meet their contractual obligations».
3.	Deutsche Bundesbank	Financial stability describes a steady state in which the financial system is effectively performing its key functions, including allocating resources and reducing risks, as well as making payments.
4.	Michael Foot, UK Financial Services Authority	Financial stability is determined by: a) monetary stability; b) the employment level of the population, close to the normal rate of employment in the economy; c) trust of economic subjects in financial institutions and markets; d) lack of relative price fluctuations for real or financial assets.
5.	Wim Duisenberg, Head of the European Central Bank	Financial stability means the smooth functioning of the key elements that make up the financial system.
6.	Roger W. Ferguson - Jr., member of the Board of Governors of the US Federal Reserve	Financial stability should be defined through its opposite - financial instability. The concept of financial instability for central banks and other regulatory bodies includes the concept of market failure or externalities that negatively affect real economic activity. Thus, financial instability is defined by three criteria: (1) prices of key financial assets that deviate significantly from fundamental values and/or (2) disruptions in the functioning of securities markets and access to credit domestically and possibly internationally ; (3) cumulative costs that deviate significantly from the potential value.
7.	Andrew Large, Deputy Governor for Financial Stability of the Bank of England	Financial stability is determined by the level of trust in the financial system.
8.	Svein Gjedrem, Governor of the Central Bank of Norway	Financial stability is determined by the absence of crises in the financial system, i.e., the financial sector's resistance to shocks that arise in the activities of financial institutions or the functioning of financial markets.
9.	Gill Marcus, Governor of the Central Bank of South Africa	Financial stability can be characterized as the absence of macroeconomic losses from shocks affecting the system of financial exchange between households, corporations and financial institutions. Resilience would be evidence of an effective regulatory infrastructure, efficient financial markets and financial institutions. A prerequisite for financial stability is awareness of the conditions for the possibility of achieving financial stability, minimizing any intervention in order to avoid systemic risk.
10.	Nout Wellink, President of the Bank of the Netherlands	A stable financial system is capable of efficient allocation of resources and absorption of shocks, avoiding a destructive impact on the real economy or on other financial systems. Also, the system should not directly be a source of shocks. Therefore, our definition covers that money that functions properly as a means of payment and as a unit of account, and a financial system that should adequately perform the function of mobilizing savings, diversifying risks and redistributing resources.

However, their theoretical justifications and applied developments are designed for countries with a developed market economy system and do not fully meet the conditions of development of the domestic economy.

The results of the research of domestic scientists in the field of ensuring the financial stability of the banking system deserve attention, in particular: O. Baranovsky, Ya. Belinska, T. Vasylieva, V. Geets, O. Dzyublyuk, Zh. Dovgan, V. Kozyuk, A. Kuznetsova, B. Lutsiva, V. Mishchenko, S. Naumenkova, O. Petryk, B. Pshyk, V. Rysin, T. Smovzhenko and others.

As for scientific works devoted to the study of risks, A.O. Yepifanov, T.A. Vasylieva, S.M. Kozmenko have made significant achievements in this field, who consider risks as "a quantified probability of non-compliance of the volume, spatial and temporal parameters of the bank's financial flows with the expected ones, which is formed as a result of purposeful action or inaction of interested parties subjects of economic relations, which affects the change in its financial status and dynamics of development" [2, p. 102].

A detailed study of the definitions of the concept of "banking risk" (Table 2) available in scientific sources allows us to assert that minor differences in interpretations depend directly on the understanding of the essence of risk.

Table 2. Approaches to defining the concept of "banking risk". (Source: compiled on the basis of elaboration [2, p. 111-117])

Author, source	Definition
L. Bondarenko	The possibility of making a rational or irrational management decision, within the framework of which it is possible to give a reliable quantitative and/or qualitative assessment of the effect of factors and, as a result, to obtain one of three economic results: positive (profit), zero or negative (loss)
M. Haretovskyi	The risk of losses arising from the specifics of banking operations carried out by credit institutions
V. Hamza	A possible (potential or real) threat to certain interests of the bank
Yu. Mishalchenko, I. Krolli	The probability of the bank losing part of its funds, not receiving planned income or incurring additional expenses as a result of planned financial transactions
H. Panova	The danger or the possibility of bank losses with the arising of certain undesirable events
V. Podchesova	The reflection of the uncertainty associated with the manifestation of competition between banks and other market participants, which affects the stability of the movement of financial flows and changes in the amount of financial resources of the bank
S. Prasolova, F. Shpyh, I. Voloshko S. Kozmenko	A value expression of the probability of an event causing financial loss
L. Prymostka	The probability of not receiving income or a decrease in the market value of the bank's capital due to the adverse influence of external or internal factors
V. Sevruk	Uncertainty of the outcome of banking activities and possible adverse consequences in case of failure
M. Fastovets	The probability of receiving revenues that are less than expected, a decrease in the value of assets
K. V. Uvarov	The possibility that certain events may negatively affect the amount of capital or the level of income of the bank

AIMS AND OBJECTIVES

The purpose of the article is to identify banking risks that affect financial stability. To achieve this goal in the article:

- the concept of financial stability of the banking system is specified;
- the factors that give rise to risks in the banking sector depending on the three forms of their manifestation (proliferation, macroeconomic shocks, imbalances) are clarified;
- approaches to choosing effective methods for identification and assessment of such risks are proposed.

METHODS

To achieve the goal defined in the article, we used the basic provisions of economic theory, theory of finance and banking. In the process of writing the article, the following general scientific and specific methods were used: theoretical generalization, comparison, systematization, and formalization - when clarifying the essence of financial stability and determining the risks of banking activity; analysis and synthesis, induction and deduction - when identifying systemic risks of financial stability.

RESULTS

As can be seen from Table 1, most definitions of financial stability or stability of the financial system are based on the concepts of trust in financial institutions or financial markets, their fortitude and liquidity.

In our research, we will rely on the following definition of financial stability: this is its dynamic state, in which the impact of any shocks on individual elements or the system, in general, does not prevent the effective redistribution of financial resources in the economy and ensure the high-quality functioning of the payment system.

Based on the definition of financial stability outlined above, we will consider the risks to the financial stability of the banking system.

The data in Table 2 show that, as a rule, the attention of scientists is focused on the financial features of risks. Therefore, it can be argued that most scientists single out the financial component of banking risks and are supporters of the opinion that banking risks are financial risks that lead to losses and damages. In the context of supervision based on risk assessment, the central bank also defines bank risk by its impact on capital and income as "the probability that events, expected or unexpected, may negatively affect the bank's capital and/or income" [3].

The bank is an open system that develops dynamically and is constantly exposed to positive and negative influences from the external environment, which can be divided into predictable and unpredictable depending on the consequences of the impact. Therefore, it is advisable to base the classification of banking risks on their division into internal and external according to the classification feature - the source of occurrence.

In our opinion, a comprehensive system of classification of banking risks should take into account only the most important, from the point of view of the possibility of anti-crisis management, classification features. We include the first three features listed in Table 3 below.

Table 3. Characteristic features of the grouping of banking risks. (Source: [2, p. 101])

Nº	Characteristic feature	Risk grouping by feature
1	By the sources of occurrence	Internal External
2	By the sphere of influence	Political, social, economic, force majeure
3	By the nature of the object	Risks of the main and auxiliary activities Risks of active operations Balance sheet and off-balance sheet risks Credit, deposit, operational, monetary, interest and others
4	By the specifics of the bank's clients	Related to large, medium and small clients Related to the industry structure of customers
5	By the nature of the impact on the stability of the bank	Liquidity risk, risk of loss of solvency, risk of capital stability
6	By time distribution	Retrospective, current, prospective
7	By assessment methods	Complex, individual
8	By volume level	Low, moderate, high
9	By the ability to manage	Open (controlled), latent
10	By the ability to predict	Predicted, not predicted

Internal risks include risks that arise directly in connection with the activities of a particular bank. The wider the circle of clients, partners, bank connections, banking operations, services, the more internal risks accompany its work. Compared to external risks, internal risks are easier to identify and assess.

In banking practice, different approaches to the division of internal risks by area of origin may be used. First, it is advisable to divide internal risks into risks related to the main and auxiliary activities of the bank. At the same time, it should be remembered that the risks of auxiliary activities can also generate significant, even catastrophic, financial losses for a banking institution, for example, as a result of banking abuses, low qualification of personnel. However, it is quite difficult to obtain reliable and adequate estimates of such risks. As a rule, they are characterized only by a conditional assessment in the form of lost profit. In more detail, the main types of internal risks that are typical for banks are presented in Table 4 [4].

Table 4. Main types of internal banking risks. (Source: [4, p. 98])

№	Type of risk	Characteristic
Financial risks		
1	Credit	The degree (level) of uncertainty regarding the occurrence of undesirable events during the implementation of credit agreements, the essence of which is that the borrower will not be able to fulfill the obligations assumed under the agreement.
2	Deposit	The degree (level) of uncertainty regarding the possibility of transferring a checking or current account to another bank or early withdrawal of a deposit.
3	Monetary	Losses incurred by the bank due to fluctuations in exchange rates and prices for bank metals.
4	Interest	The degree () of uncertainty regarding the possibility of the bank incurring losses due to adverse changes in interest rates.
5	Investment	The degree () of uncertainty regarding the possibility of depreciation of securities purchased by the bank, the probability of not reaching the planned level of payback of new banking products, services, operations, technologies, as well as in the case of real investment of capital.
6	Liquidity	The degree () of uncertainty regarding the bank's ability to ensure the timely fulfillment of monetary obligations to customers. In the process of studying liquidity risk.
7	Insolvency	The degree () of uncertainty regarding the fact that the bank will be unable to meet its obligations.
Functional risks		
8	Strategic	Associated with errors in the implementation of strategic management functions (incorrect formulation of the bank's goals and strategy, etc.).
9	Technological	Related to the use of technical means, equipment and software products in the bank's activities.
10	Operating	Determined by the probability of a discrepancy between the bank's expenses for carrying out its operations and their effectiveness.
11	Documentary	Consists in the possibility of an error in the documentation, which can lead to negative consequences - non-fulfillment of the provisions of the agreement, filing a lawsuit, reneging on previously accepted obligations, etc.
12	Transaction risk	Accompanies conclusion and registration of agreements, execution of calculations, signing of contracts, delivery of securities or currency. This type of risk is closely related to technological, documentary and operational risks.
13	Risk of abuse	The possibility of losses for the bank, which lead to fraud, embezzlement, unauthorized access to key information by employees or customers of the bank, money laundering, unauthorized conclusion of transactions.

Functional risks significantly affect the activity of banks. The reasons for their occurrence are the impossibility of timely and complete control over the bank's financial and economic activities. Functional risks are associated with the processes of creation and introduction of new banking products and services, collection, processing, analysis and transfer of information, training of human resources and performance of other administrative and economic operations. These risks are more difficult to describe, identify, quantify and express in monetary units than financial risks. Banks try to minimize the negative impact of functional risks by improving internal audit systems, document flow schemes, internal methods and technical and economic support of individual operations. A well-thought-out resource, material and technical and personnel policy also contributes to the reduction of these risks.

By the areas of occurrence, functional risks can be differentiated into strategic, technological, operational, documentary risks and transaction risks (see Table 4).

External risks traditionally include risks that are not directly related to the activities of the bank or its clientele. Their influence on the effectiveness of the bank's work is quite high. Managing these risks is difficult and sometimes impossible. The most common external risks are reputational, force majeure and systemic.

Reputational risk is a risk that arises due to a negative perception of the bank's image in society. Its occurrence negatively affects the bank's ability to establish new relationships with counterparties, provide new services or maintain existing relationships, which leads to financial losses due to a decrease in the client base.

Quite often, reputational risk is considered a component of a group of competitive risks associated "with the level of competition between banks and banking structures, the possibility of bank mergers, the emergence of new types of banking operations and agreements, a decrease in the cost of services provided by other banks, an increase in requirements for the quality of banking services, the ease of emergence of new banking institutions, the complexity of the bankruptcy procedure" [5, p. 47].

Force majeure risks are the degree of uncertainty regarding the possibility of natural disasters, catastrophes, etc., which may lead to financial losses. Such risks depend both on natural phenomena and their associated consequences, and on various restrictions imposed by the state. To some extent, the impact of such risks on the activity of banking institutions can be reduced by creating an effective system of operational warning and informing about changes in the relevant circumstances of banking activities.

Systemic risks are political, legal, social and general economic risks that arise as a result of a change in the strategic priorities of the socio-economic development of the country, the imperfect formation of the organizational and economic mechanism, the inadequacy of the use of operational and tactical methods, tools and measures for the regulation of socio-economic processes and relations, which manifests itself in a change in the demographic, social, economic and political situation. In our opinion, it is systemic risks that have the greatest impact on the functioning of the organizational and economic mechanism of ensuring the financial stability of the banking system, so we will consider them in more detail.

Most foreign researchers define the essence of systemic risk as the probability that the negative impact of financial instability can weaken the banking sector and thereby cause the suspension of economic growth and the deterioration of public welfare.

In the works of domestic scientists, the concept of systemic risk was currently applied mostly to banking transactions with securities. Thus, L. Prymostka notes that portfolio risk consists of two parts - non-systemic and systemic. The first is determined only by the dispersion of yields of individual securities. Systemic risk, which is part of the overall risk of the system, depends on the state of the economy in general and is determined by macroeconomic factors, such as the dynamics of investments, the volume of foreign trade, changes in tax policy, the state of the balance of payments, and therefore is present in the activities of all subjects of the economic process. Systemic risk cannot be reduced by diversification, therefore it is called non-diversified or market risk [6, p. 147].

A similar understanding of the essence of systemic risk can be found in the few works of Ukrainian researchers on this topic. In particular, A. Kovalyuk defines systemic risk as a situation in which the insolvency of one or more financial institutions in a difficult situation may lead to the collapse of other financially stable institutions, companies [7, p. 259].

Summarizing the above approaches to defining systemic risk, it can be stated that the most common approaches describe it as the probability of the occurrence of large-scale systemic events of a negative nature that affect the activity of systemically important intermediaries and markets (including the relevant infrastructure). Catalysts of such events can be exogenous shocks (systemic or local) originating from outside the financial system. At the same time, systemic risk can also be caused by endogenous shocks that have appeared in the financial system itself. Systemic events are considered large-scale if they can lead to the bankruptcy of financial intermediaries or disrupt the stability of financial markets. Individual researchers [9, 10, 11] distinguish "horizontal" systemic risk, which may appear as a result of the activity of the financial system itself, and "vertical" risk, which arises as a result of bilateral relationships between the financial system and the economy. In general, the complexity of systemic risk and systemic events will depend on the extent of their impact on consumption, investment, and economic growth.

Another aspect that should be paid attention to when determining the essence of systemic risk is the high degree of interdependence between financial intermediaries. In today's conditions, it is difficult to imagine a situation where the crisis covers the banking sector, and the sector of non-bank intermediaries works stably. In view of this, the modern structure, and principles of functioning of the sector of financial intermediaries give reasons to exude a single systemic risk for the financial sector when interpreting it as a set of financial intermediaries operating on the scale of one country.

Taking into account the above-mentioned approaches and processing a significant amount of scientific literature allows us to conclude that V.V. Rysin approached the definition of systemic risk of financial intermediaries in the most comprehensive way, according to whom "systemic risk is the probability of the occurrence of adverse systemic events caused by exogenous or endogenous shocks, which cause financial market instability and may lead to the insolvency of a significant number of interdependent financial intermediaries" [12, p. 114].

As part of the systemic risks of banking activity, political and socio-economic risks can be conventionally distinguished, which are quite closely related to each other, which significantly complicates their separate assessment. Political risks are caused by changes in the political situation and are a measure of their potential impact on the activities of the banking sector [13].

If a more detailed analysis is needed in the structure of systemic risks of banking activity, the following can be distinguished: general economic, sectoral, legislative, criminal, social, environmental, financial, technical, inflationary, interest-bearing, market, currency, and other types of risks.

In modern conditions, the threat to the financial stability of the banking system is [14]:

- a sharp deterioration of the situation on the world financial and/or commodity markets, which is transmitted to the banking system of the state through the channel of capital movements ("financial infection");
- "overheating" of one of the segments of the domestic financial market, for example, intensive growth of lending, uncontrolled bankruptcies of large system-forming banks, short-term but powerful liquidity crises, unfolding of the crisis of public finances and the inability of the state to settle its debts on time;
- a speculative attack on the national monetary unit for maintaining the actual peg of its exchange rate to the US dollar and worsening the balance of the trade balance;
- the crisis of state finances in the conditions of the growing burden on the budget and the lack of non-debt sources of its filling, etc.

Therefore, given the high mobility of financial activity in modern conditions, the assessment of systemic risk should cover all its components, take into account exogenous and endogenous factors of occurrence, including financial innovations and structural changes in financial systems and the latter's relationships with the real sector of the economy.

The sequential or simultaneous influence of local and systemic, endogenous, and exogenous factors of systemic risk illustrates its complex nature of influence on the financial stability of the banking system. Accordingly, the only way to reduce it, which will contribute to the effective functioning of the banking system, is the effective application of such a set of methods and tools that would allow simultaneous consideration of the three main forms of systemic risk recognized by researchers of this problem (Figure 1): risk of proliferation; the risk of macroeconomic shocks; risk of imbalances [11]. The above forms of systemic risk are not mutually exclusive and can materialize both independently and in combination with each other. The risk of proliferation is often attributed to local problems that can become systemic - the bankruptcy of one bank can cause the bankruptcy of another bank, even if such a bank seemed solvent.

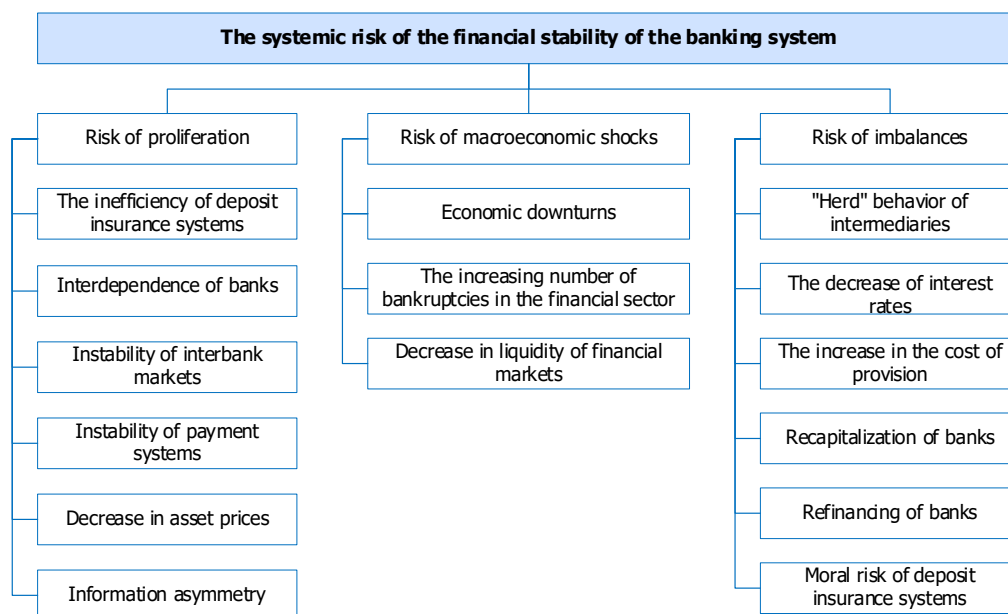


Figure 1. Classification of forms of systemic risk of the financial stability of the banking system. (Source: [11])

As V. Rysin notes in his work: "The second form of systemic risk is related to systemic exogenous shocks, which simultaneously negatively affect both the sector of financial intermediaries and the markets. Both of them are sensitive to economic downturns, so the general deterioration of the economic condition can also cause systemic risk in the financial sector" [11, p. 141].

"The third type of systemic risk is related to an endogenous factor - a wide build-up of imbalances in the financial system over a certain period of time. The consequences of such a phenomenon have a negative impact on many intermediaries and markets. The last two forms of systemic risk are of particular importance for the procyclicality of the financial system, although the risk of proliferation can also play a role in this process" [15, p. 146].

In addition to the three forms of systemic risk listed above, there are a number of other market imperfections - asymmetric information, external factors, socially oriented policies, incomplete markets, etc. They lead to greater vulnerability of the

banking sector and the banking system in general compared to other sectors of the economy in view of the information intensity and term nature of financial and credit agreements, the structure of balance sheets of financial intermediaries (high level of funds involved and mismatch of terms), high level of interdependence in financial and credit activities [16]. The combination of the above market failures with the three forms of systemic risk creates powerful feedback mechanisms between the real and financial sectors.

In recent years, a large number of scientific works have been published regarding the essence and features of the manifestation of the risk of proliferation of crisis phenomena. Most of them considered the risk of proliferation in the banking sector, in payment systems or in the main financial markets.

It is common knowledge that banks that are not covered by deposit insurance systems may face a sharp outflow of funds from individuals. Such phenomena can spread in case of insufficient information of depositors about the state of affairs in the bank or assessment of such state based on system-wide trends. The introduction of effective deposit insurance systems has allowed in most industrialized countries to minimize the risk of spreading panic among depositors. In Ukraine, despite the functioning of the deposit guarantee system of individuals, there was a massive outflow of their funds from banks, which became almost the main reason for the deterioration of the financial condition of the banking sector.

On a global scale, the starting point for systemic risk has become the interbank markets. It should be noted that since the mid-1990s, scientific literature has been talking about the increased danger of these markets in periods of instability [17, p. 126]. The first channel for the spread of risk arises from the dependence of banks on such markets. If there is a deterioration of market conditions in the loan capital market, banks will prefer to lend to each other rather than maintain a higher level of liquidity. If the deterioration of the situation affects the interbank market as well, then the available amount of liquid assets may not be enough to implement all interbank transactions, and then a series of bank bankruptcies may begin. In other words, the price for the distribution of risks among banks is the risk of proliferation of crisis phenomena. In the studies of H. Freihas [18] and J.S. Roche [19] proved that more complex and diversified structures of interbank lending (when many banks lend money to each other) should be more stable than incomplete structures in which banks carry out lending according to the chain principle, or one or more banks are a source of resources for a number of others (principle of the financial center).

It should also be mentioned the "network theory", according to which banks are "nodes", and interbank loans are "arcs", with the help of which banks, if necessary, can support each other's liquidity in order to prevent the collapse of the entire network [20, p.32]. Given the presence of moral risk and the endogeneity of interbank relationships, the risk of proliferation in the interbank market should be rare unless banks stop lending to each other. However, contrary to the results of the studies described above, the current financial crisis has shown that the risk of contagion is greater in those markets with a more complex structure of interbank lending.

Another reason for the spread of crisis phenomena in interbank markets is information problems, in particular asymmetric information, which creates the basis for adverse choices. The essence of the problem of adverse selection is that banks are unable to distinguish between bad and good assets or counterparties, which can stop the credit process and contribute to the accumulation of liquidity in the banking system. Accordingly, this problem can partly be considered one of the reasons for the accumulation of resources on the interbank markets and the spread of the crisis.

The risk of proliferation is also characteristic of large payment systems. Economic literature often emphasizes the compromise between risk and efficiency of such systems, while comparing the forms of organization of the settlement process [21]. For a system in which each payment is made independently in real-time, the risk of proliferation will not be characteristic, but it will be quite expensive for banks, which will be forced to keep large reserves of liquid funds at their disposal. In addition, making calculations in such a system can be complicated and take quite a long time - if the bank doubts the reliability of its counterparty, it may not make a payment. In this way, the settlement system can reach a dead end. The opposite variant of the payment system (the system of mutual repayment of claims) is associated with a much higher level of systemic risk since the offsetting of payments and irregular settlements carry certain threats [22, p. 33].

Most of the payment systems existing in the world today are hybrid and try to balance efficiency and risk. For example, real-time calculations are made with the appropriate level of securement and reliable counterparties, minimum requirements for securing payments are established, and the frequency of offsets of requirements increases. However, it should be stated that in the conditions of the current crisis, the problems of payment systems did not play a significant role. Its main factor was the activity of OTC derivatives markets.

The impact of endogenous factors and liquidity problems can be exacerbated by "sales" of assets in stressful situations. We are talking about cases when a number of financial intermediaries own similar portfolios of assets. If the financial condition of some intermediaries deteriorates, they will try to sell such assets, causing their prices to fall. In such a

situation, other market participants will also begin to sell their assets, which will start a downward spiral in asset prices and complicate both market trading opportunities and access to resources for financial institutions and securities traders. A reduction in market liquidity, in turn, will lead to further declines in asset prices and more expensive loans. Such a closed circle played a decisive role in the development of the modern economic crisis and undermined the stability of the banking system [23].

When considering the risk of macroeconomic shocks, it should be noted that many financial crises in world history have been associated with economic downturns. Banks are vulnerable to such downturns as credit risk increases and deposit obligations must be met. Other macroeconomic shocks include a significant number of bankruptcies or a sharp decrease in the liquidity of financial markets [24, p. 27].

The risk of macroeconomic shocks and the risk of proliferation can interact since the deterioration of the financial condition of individual banks due to macroeconomic problems can lead to the spread of this phenomenon to other financial institutions.

The historical experience of the functioning of the banking sector shows that systemic financial crises can also be caused by imbalances in the structure of the resource base of financial intermediaries. The behavior of financial market subjects is cyclical - under stable conditions, consumption, and investments (financial or real) grow and create incomes, which finance further growth in consumption and investments. At the same time, attention is often not paid to the growth of risks. As a result, even minor adverse events can lead to the materialization of the latter and the suspension of the credit boom, which negatively affects the activity of the sector of financial intermediaries and the financial market in general. The analysis of literary sources [25, 26, 27] gives grounds for identifying at least four reasons for the appearance of imbalances in the banking sector, which make it systemically vulnerable:

- "Herd" behavior in financial markets, which provokes intermediaries to invest money in similar assets. If the profitability of certain financial instruments is not determined, then investors can draw conclusions about their attractiveness based on the decisions of other market participants. In this case, the assessment of the value of financial assets by banking analysts can play an important role;
- Low-interest rates of banks can increase the level of risk. This factor is one of the determining factors in the development of the current crisis and the decrease in the level of financial stability of the banking system. Lower rates do not contribute to the perfect study of borrowers by banks, but it increases the value of assets used as collateral;
- An increase in the cost of collateral increases the credit potential of the economy. This allows certain branches of the economy, which have positive development dynamics, to receive more loans secured by their property in the future. Other industries can also benefit from the increase in the cost of collateral and expand the scope of bank loans. The limits of the growth of the credit process in this case depend on the establishment of lending conditions by banking institutions, taking into account the expectations of investors and moral risk;
- Financial security of the banking sector and protection of depositors' interests are sources of moral risk and, accordingly, the risk of imbalances. Deposit insurance systems reduce depositors' incentives to monitor banks' risks, since the riskier a bank's policy is, the more deductions it makes to the system. That is, the system is actually interested in the risky activities of banks, as it contributes to the growth of its resources. Imbalances can also arise when banks are recapitalized by the state or when the central bank acts as a lender of last resort.

When assessing the financial stability of the banking system, it is often necessary to focus on exceptional but possible events and analyze the likely consequences of the simultaneous manifestation of risks. For example, it was established that during the financial crisis of 2013-2014, the total amount of assets on the balance sheets of central banks of developed countries and new market economies increased to about 14 trillion dollars USA for each group of countries. This growth is explained by the anti-crisis measures of central banks and, partially, the accumulation of foreign exchange reserves by new market economies. The risks associated with the growth of central bank balance sheets due to the introduction of large-scale stimulus programs were the acceleration of inflation and the undermining of confidence in central banks, on a global scale - increased volatility in capital markets.

The financial and economic crisis of recent years clearly demonstrated the relevance of systemic risk research and its decisive impact on the financial stability of the banking system. In order to improve the system of supervision of the financial sector, in October 2009, the EU countries approved the decision to create the European systemic risk board (ESRB), which works under the European Central Bank. The tasks of the Council include a timely warning of the entire financial system of Europe about possible troubles and providing recommendations to individual states, groups of countries and relevant supervisory institutions.

Some countries and international financial organizations have been conducting research on the systemic impact of a wide range of shocks on the financial sector and the economy for the past decades.

The study of foreign experience shows that in world practice, the growing importance of financial sources of macroeconomic instability prompted to expand the range of analytical reviews and forecasts regarding the development of the macro-financial situation in the country and possible ways to identify risks that are taken into account when preparing reports on financial stability [28, 29].

Today, special attention is paid to determining the systemic risks that the financial sector and the banking sector may face, and how it can react to them, as well as through which channels the actualized risks will be transmitted to the behavior of macro-financial variables. Usually, foreign financiers-practitioners recommend grouping such risks into three large groups [18, 30, 31, 32]:

- macroeconomic risks. For example, a recession lowers the ratings of financial institutions and sovereign bonds, which raises interest rates and tightens credit standards. Deterioration in the quality of sovereign debt instruments may be due to a structural or cyclical response of the budget to a slowdown in economic growth or a recession, which has corresponding consequences for the quality of assets in the financial sector. Inflationary risks affect financial stability through central bank interest rate policies. A tougher anti-inflationary response may increase the risk of financial shocks in the event that the financial sector has a gap in the time structure of assets and liabilities, etc.

As an alternative to the macroeconomic risk identification approach, sectoral risks will reflect the specific vulnerability of a country's economy to idiosyncratic shocks. In the case of a high level of specialization in the country, sectoral risks almost completely reflect the risks of the real sector. However, sectoral risks are not limited to the vulnerability of the real sector. The vulnerability of the public sector, households and the corporate sector can have equally serious implications for financial stability. For example, a specific shock may be transmitted to a decrease in household income. In the case when the level of leverage of the household sector is high (the level of leverage of the household sector can be estimated on the basis of the ratio: the volume of loans granted to real disposable incomes; the volume of loans granted to the net wealth of households (market value of property and income excluding financial liabilities); the volume of loans granted to the sector to GDP compared to the real sector, etc.), then the drop in income leads to a drop in consumption, savings, and, most importantly, causes a sharp deterioration in the quality of the assets of financial institutions, which automatically exacerbates the problem of their liquidity and solvency. Falling profitability in the real sector may impair its ability to service debt obligations, as well as affect the future availability of financing and credit, etc.;

- financial sector risks. This group of risks concerns the individual vulnerability of systemic financial institutions, general trends in the practices and performance of financial institutions, the behavior of markets and market conditions, and weak points of the financial market infrastructure. The individual vulnerability of the largest financial institutions creates risks of panic and outflow of capital and deposits, increases volatility in the money market, distorts the demand for short-term liquidity funds, and triggers waves of insolvency through network connections. General trends in the field of financial institutions may reflect problems with the level of their profitability, liquidity, and solvency, as well as the accumulation of gaps in the term and currency structure of assets and liabilities, problems with ensuring own capital in conditions of deterioration in the quality of assets, a discrepancy between the loan portfolio and the market value of assets, etc. The systemic effects of market risks reflect the vulnerability of the financial and real sectors to changes in the structure of interest rates. Changes in the structure of interest rates are transmitted to the availability of financing and lending, fluctuations in the value of assets, as a result of which the liquidity and solvency of financial institutions and other sectors are in a state of sensitivity to changes in the attitude to risk, and the attitude to risk itself turns into a fundamental component of market conditions. Financial bubbles can also have longer-term consequences, in the form of structural distortions (for example, a bubble in the real estate market encourages excessive investment in the construction sector). Financial infrastructure risks demonstrate how, for example, payment systems are vulnerable to the availability of short-term liquidity, etc.;
- external or global risks. This group of risks reflects the vulnerability of the financial system to changes in the global sector and financial situation. The change in relative prices leads to the deterioration of the real sector and the household sector and raises questions about the financing of the balance of payments. Exchange rate risks affect the state of the financial system, which is unbalanced in terms of the currency structure of assets and liabilities, or which is vulnerable to mismatches in the currency structure of assets and liabilities in counterparty sectors. Fluctuations in global interest rate spreads, and capital flows directly affect the availability of external financing and its use to cover domestic payment gaps, etc.

DISCUSSION

We support the definition of financial stability of the banking system proposed by O.I. Baranovskyi [25, p. 78], in which the author defines it as the ability to resist external and internal influences, maintaining stable balance and reliability, that is, it characterizes the qualitative state of the banking system in dynamics. According to the scientist, the financial stability of the banking system should be understood as the absence of obstacles in its functioning for performing its role as a financial intermediary in the economy.

At the same time, our definition of financial stability is somewhat similar to the definition proposed by scientist A. Lazne, namely: "Financial stability of the banking system is the absence of obstacles in the dynamic development of the banking system in order to effectively fulfill the role of a financial intermediary in the economy." The scientist noted the differences between the concepts of financial stability and financial fortitude and proposed to consider the financial fortitude of the banking system as "the state of its functioning in the short term, in particular, as the ability of banking institutions to transform their resources (personnel, financial resources, assets, equipment and information technologies) to perform their functions in the market environment despite the influence of external and internal factors" [4, p. 46].

Various methodical approaches can be used to identify risks, but we propose to take as a basis the following three, which are substantiated in works [11, 18, 33].

- Application of financial indicators and indices calculated on the basis of current reporting information. Such indicators and indices may have a complex and functional nature, reflecting the state of the banking and para banking systems, the level of indebtedness of the corporate and household sectors, and the tendency to accumulate financial imbalances;
- Application of indicators formed on the basis of market information. The main emphasis is placed on the behavior of spreads, stock market indices, indices of the financial condition of the environment, indices of market volatility and uncertainty indices, risk attitude indices, etc. Unlike the first group, the indicators of this group are a reflection of market expectations of the future and are not obtained with a certain statistical lag;
- Application of quantitative modeling and stress testing. This approach makes it possible to identify weak points and financial vulnerability at the individual and system levels, which cannot always be noticed on the basis of descriptive analytics. And also to assess the scale of the reaction of the banking system to the type and strength of the shock, which allows for predicting the nature of its behavior in accordance with probable scenarios of the development of events.

CONCLUSIONS

The biggest threat to the financial stability of the banking system is posed by systemic risks (political, legal, social, and general economic) that arise as a result of changes in the strategic priorities of the country's socio-economic development, the imperfect formation of the organizational and economic mechanism, the inadequacy of the application of operational and tactical methods, tools and regulatory measures socio-economic processes and relations, which is manifested in a change in the demographic, social, economic and political situation. An effective way to reduce systemic risk is simultaneous consideration of its three main forms: risk of proliferation; risk of macroeconomic shocks; risk of imbalances.

When making decisions about the financial stability of the banking sector and the banking system in general, the following methodical approaches to risk identification should be used: 1) the use of financial indicators and indices calculated on the basis of current reporting information; 2) application of indicators formed on the basis of market information; 3) application of quantitative modeling and stress testing.

The above methods of identifying risks can be used both directly and in combination with others, which will increase the accuracy of such an assessment and help prevent possible imbalances that cause financial instability in the banking system.

REFERENCES

1. Pshyk, B.I. (2013). Finansova stabilnist: sutnist ta osoblyvosti proiavu. Visnyk SevNTU: Ekonomika i finansy. Vol. 138/2013., pp. 91-96.
2. Vasylieva, T.A. (2012). Kontseptualni zasady pobudovy mekhanizmu upravlinnia kredytnym ryzykom banku / T.A.Vasylieva, I.V.Krasiuk // Upravlinnia ryzykamy bankiv : monohrafiia u 2-kh tomakh. T. 1. Upravlinnia ryzykamy bazovyykh

- bankivskykh operatsii / [A. O. Yepifanov, T. A. Vasyliieva, S. M. Kozmenko ta in.] / za red. d-ra ekon. nauk, prof. A. O. Yepifanova ta d-ra ekon. nauk, prof. T. A. Vasylievoi. – Sumy: DVNZ "UABS NBU"
3. Laznia, A.V. (2013). Ryzyky finansovoi stabilnosti bankivskoi systemy: klasyfikatsiia, osoblyvosti proiavu ta identyfikatsii. Visnyk TNEU. Vol. 4. pp. 44-52.
 4. Laznia, A.V. (2014). Restrukturyzatsiia bankivskoi systemy v Ukraini : monohrafiia [Tekst] / A.Ia.Kuznietsova, O.V. Nevmerzhytska, A.V. Laznia. – Universytet bankivskoi spravy NBU (m. Kyiv). – K.: UBS NBU, 215 p.
 5. Dziubliuk, O. V. (2009). Finansova stiikist bankiv yak osnova efektyvnoho funktsionuvannia kredytnoi systemy : monohrafiia / O. V. Dziubliuk, R. V. Mykhailiuk. – Ternopil : Ternohraf, 316 p.
 6. Rezultaty stres-testiv yevropeiskyykh bankiv. <http://www.prostobankir.com.ua>.
 7. Kovaliuk, A.O. (2008). Finansove rehuliuвання bankivnytstva v Ukraini: terminolohiia i systematyzatsiia. Naukovyi visnyk NLTU Ukrainy. Vol. 18.4., pp. 258-265.
 8. Kovaliuk, A.O. (2008). Finansove rehuliuвання bankivnytstva v Ukraini: terminolohiia i systematyzatsiia. Naukovyi visnyk NLTU Ukrainy. Vol. 18.4., pp. 258-265.
 9. Kovaliuk, A.O. (2008). Finansove rehuliuвання bankivnytstva v Ukraini: terminolohiia i systematyzatsiia. Naukovyi visnyk NLTU Ukrainy. Vol. 18.4., pp. 258-265.
 10. Kozmuk, N.I. (2009). Likvidnist banku yak faktor zabezpechennia stiikosti v period nestabilnosti. Problemy i perspektyvy rozvytku bankivskoi systemy Ukrainy., Vol 27., pp. 146–153.
 11. Rysin, V. V. (2011). Systemnyi ryzyk bankivskoho sektora: sutnist, formy ta chynnyky. Efektyvna ekonomika. Vol. 1. <http://www.economy.nayka.com.ua/index.php?operation=1&iid=184>.
 12. Rysin, V. V. (2012). Realizatsiia resursnoi polityky bankiv v umovakh finansovoi nestabilnosti : monohrafiia / V.V. Rysin. – K. : UBS NBU, 390 p.
 13. Kuznyetsova, A. Ya., and V. O. Dzhulai (2012). Antykryzove upravlinnia v bankivskomu sektori ekonomiky Ukrainy: stan, problemy i perspektyvy : monohrafiia. – K.: UBS NBU, 202 p.
 14. Kuznetsova, A.Ya., and V.O. Dzhulai (2010). Monitorynh stiikosti bankivskoho sektoru Ukrainy: antykryzovyi aspekt. Finansy Ukrainy. vol 5 (173). pp. 86–97.
 15. Smovzhenko, T.S., Trydid O. M., and Vovk V. Ya.Antykryzove upravlinnia stratehichnym rozvytkom banku: monohrafiia. K.: UBS NBU, 432 p.
 16. Senchenko, O. (2011). Reitynhova otsinka bankiv u rozrizi analizu yikh finansovoi bezpeky na osnovi taksonometrychnoho metodu. Visnyk NBU. vol 1 (179). pp. 58–60.
 17. Tranchenko, L., and L. Zaiats (2010). Instrumenty ta metody orhanizatsiino-ekonomichnoho mekhanizmu finansovoi stabilnosti v Ukraini. Efektyvna ekonomika. vol. 3. <http://www.economy.nayka.com.ua/index.php?operation=1&iid=141>.
 18. Xavier, Freixas, Bruno, M. Parigi, and Jean-Charles, Rochet (2000). Systemic Risk, Interbank Relations, and Liquidity Provision by the Central Bank. Journal of Money, Credit and Banking Vol. 32, No. 3, Part 2: What Should Central Banks Do? (Aug., 2000), pp. 611-638 (28 pages) <https://doi.org/10.2307/2601198>
 19. Jean, Rochet, and Jean, Tirole (1996). Interbank lending and systemic risk. Journal of Money, Credit and Banking, 1996, vol. 28, issue 4, 733-62.
 20. Karcheva, H. (2007). Vykorystannia metodiv neparametrychnoi statystyky dlia otsinky ryzyku likvidnosti bankiv. Visnyk NBU. vol 7. pp. 31-33.
 21. Tun, K. (2013). Stress-testy bankovskoy sistemy ES. Bankovskoe delo. vol 9. pp. 42.
 22. Pernarivskyi, O. (2000). Ryzyk ta likvidnist komertsiihnoho banku. isnyk Natsionalnoho banku Ukrainy. Vol 4. pp. 31–34.
 23. Marynych, T.O. (2010). Komparatyvnyi analiz indykatoriv finansovoi stabilnosti Ukrainy. Mekhanizm rehuliuвання ekonomiky. Vol 3. pp. 218-225.
 24. Pernarivskyi, O. (2006). Analiz ta otsinka ryzyku likvidnosti banku. Visnyk Natsionalnoho banku Ukrainy. Vol 10. pp. 26–29.
 25. Mishchenko, S. (2008). Kryterii ta pokaznyky otsinky stabilnosti funktsionuvannia finansovoho sektoru. Visnyk Natsionalnoho banku Ukrainy. Vol 9. pp. 36-45.
 26. Natsionalnyi bank Ukrainy : Statystyka indykatoriv finansovoi stiikosti. <http://www.bank.gov.ua/>.
 27. Ponomarova, O.V. (2009). Hlobalna finansova nestabilnist : monohrafiia. K. : KNEU, 442 p.

28. Petryk, O.I. (2009). Finansova kryza v Ukraini ta zakhody shchodo yii podolannia. Visnyk Natsionalnoho banku Ukrainy. Vol 8. pp. 4-10.
29. Podkhody k organizatsii stress-testirovaniya v kreditnykh organizatsiyakh <http://cbr.ru/analytic/stress.htm>.
30. Goddard, John and Molyneux, Philip and Molyneux, Philip and Wilson, John O. S. (2009). The Financial Crisis in Europe: Evolution, Policy Responses and Lessons for the Future (June 5, 2009). <http://dx.doi.org/10.2139/ssrn.1414935> DOI: [10.1108/13581980911004352](https://doi.org/10.1108/13581980911004352)
31. Sorge, M. (2004). "Stress-testing financial systems: an overview of current methodologies," *BIS Working Papers* 165, Bank for International Settlements.
32. Systemic Risk (Clare Distinguished Lecture in Economics and Public Policy by Jean-Claude Trichet, President of the ECB). – Clare College, University of Cambridge, 10 December 2009. www.ecb.int/press/key/date/2009/html/sp091210_1_en.html.
33. Oliver De Brandt Philip Hartman. Systemic risk survey / Rabochiy doklad Evropeyskogo tsentralnogo banka. 2013. <http://www.ecb.int/home/html/index.en.html>.

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ІДЕНТИФІКАЦІЯ БАНКІВСЬКИХ РИЗИКІВ ТА ЇХНІЙ УПЛИВ НА ФІНАНСОВУ СТАБІЛЬНІСТЬ

Стаття присвячена поглибленню теоретико-методологічних засад дослідження банківських ризиків і їхнього впливу на фінансову стабільність.

На основі проведеного узагальнення результатів наукових досліджень уточнено сутність понять «фінансова стабільність», «банківські ризики». Обґрунтовано методологічні підходи до ідентифікації та класифікації банківських ризиків.

Дослідження дозволило розмежувати поняття фінансова стабільність та фінансова стійкість банківської системи. Наголошено, що фінансова стабільність є динамічною характеристикою банківської системи, а фінансова стійкість відбиває її поточний, статичний стан.

У статті уточнено види ризиків, які притаманні банківській системі, та виокремлено класифікаційні ознаки, що дозволили провести ідентифікацію основних ризиків, які найбільше впливають на фінансову стабільність.

Установлено, що в сучасних умовах суттєву загрозу фінансовій стабільності можуть становити: різке погіршення кон'юнктури на світових фінансових і/або товарних ринках, що передається в банківську систему; «перегрів» одного із сегментів внутрішнього фінансового ринку; спекулятивна атака на національну грошову одиницю за збереження фактичної прив'язки її курсу до долара США та погіршення сальдо торгового балансу; криза державних фінансів тощо.

Ключові слова: ризик, банківські ризики, системні ризики, фінансова стабільність, класифікація

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