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Rodionova T. A.
Yanko Y. O.
Odessa I. I. Mechnikov National University

FUNDAMENTALS OF FINANCIAL STABILITY OF THE BANKING SYSTEMS

The article is devoted to theoretical problems of financial stability of the banking system. The concept of financial stability of the banking system, as well as methods for assessing the banking system stability and its regulation are reviewed. A list of indicators, such as financial soundness, early warning and others, which are designed to identify banking system vulnerabilities, are presented. Special attention is devoted to the Basel III rules and its implementation in the EU.
Key words: banking system, financial stability, indicators of financial stability, Basel.

Introduction. The necessity to understand the concept of financial stability of the banking system, as well as methods for assessing the stability of the banking system and the methods of its regulation cannot be overestimated. Many publications are devoted to the study of these economic concepts, but the institutional development of the financial market, especially in the period of globalization of economic processes, requires adjustments of the approaches to their interpretation, as well as the development of adequate methods of assessment and analysis.

In all countries, the banking system plays a decisive role. Moreover, it provides the economy with the required amount of financial resources, providing free movement of capital, lending to the economy, as well as the implementation of other important functions and tasks. Without a developed and stable banking system a developed state economy cannot exist.

The goal of the research. This article aims to review existing theoretical foundations for the formation of a stable banking system and highlight the most important policy tools in the current conditions of the development of the world economy.

Presentation of the main material. The financial condition of the banking system and the financial condition of the economy are two interrelated phenomena. They depend on the development of social relations in general. On the one hand, the efficiency of the banking system has a positive impact on investment activity and economic growth in the country. On the other hand, the efficiency of of banks is largely dependent on the situation in the economy: during the crisis and the decline in investment activity of economic entities the banks are shifting towards speculative and risky operations [1].

On the one hand, collapse of an individual bank is necessarily a factor in the financial instability of the banking system. On the other hand, financially stable can be considered such a banking system, which ensures the absence of systemic banking crises with the stability of asset prices. There are several methods for assessing the stability of the banking system. CAMEL is a credit rating system for credit rating agencies. Another method of assessing the stability of the banking system is the interpretation of financial stability indicators (FSI), which provide an understanding of the financial status and reliability of banking institutions in the country. They are divided into three main groups: on a capital basis, on the assets basis, and basis on incomes and expenditures. Another method is early warning indicators (EWIs). EWIs of banking crises are typically based on the notion that crises take root in disruptive financial cycles.

The main banking supervisory authority in the EU is Basel III. It is a list of recommendations for supervising banking activity. Recently the recommendations from Basel III have become rules. Later in the article rules of Basel III and its implementation in the EU are given a closer look.

Review of the banking stability literature. Definition of the concept of "financial stability of the banking system" in the interpretation of some researchers has several differences. O. Kanaev assumes that the financial stability of the banking system is a partial manifestation of financial reliability or a characteristic of the term "reliability". Economist Ovchinnikova believes that the stability (reliability) of the banking system implies the ability of the system to perform basic and new functions, regardless of the nature of external influences, including on the basis of qualitative change in its own structure [2]. G. Fetisov gives the following statement that the stability of the banking system is its qualitative characteristic, such a development, in which essence and purpose are inherent to the economy [3]. According to L. Davydova, financial stability is an economic category in which the measure or degree of conformity of the results of the financial and economic activity of the banking system with the requirements and conditions of its functioning in a market-changing environment is expressed. According to L. Davydova, financial stability is an economic category in which the results of the analysis of the conditions of functioning in a market environment are analyzed [4].

There are several approaches to the interpretation of the term "financial stability of the banking system." The first approach is based on the ability of the banking system to withstand external shocks as a key component of sustainability [5].

In accordance with this approach, collapse of an individual bank is necessarily a factor in the financial instability of the banking system. It can also contribute to improving the efficiency of financial intermediation and thus maintain financial stability of the banking system. In addition, the stability of the banking system has the ability to provide an effective transformation of savings into long-term investment. The disadvantage is that the dependence of the instability of one bank on the stability of the entire banking system can not be direct, as the problems of one bank do not always apply to the whole system.

In accordance with the second approach financially stable can be considered such a banking system, which ensures the absence of systemic banking crises with the stability of asset prices. The advantage of this approach is that it enables us to use available metrics as variables in assessing financial

sustainability. But in general, this approach is less attractive, because "the absence of banking crises" does not ensure the financial stability of the banking system.

The stability of the banking system can be divided into several categories. A stable banking system can be classified as: economic, political and moral. Economic stability is determined by the relationship that comes with shareholders and other banking institutions. Political is manifested in compliance with legislative and regulatory acts and the ability to withstand political pressure that is incompatible with the banks' aims. Moral stability involves the formation of monetary policy, which adheres to ideas and principles adopted by society.

The main characteristic features that distinguish a stable banking system are adjustment, control, infrastructure, independence and two-tier structure (Table 1).

Stabilization function of a banking system is associated with high risk of banking activities, while banks destabilize not only their own activities, but also the entire money market. The basis of the risk is that banks operate with someone else's capital, which is controlled by clients, investors, investors, borrowers, and banking is determined not only by economic calculations but also by expectations and rumors.

In banking practice, the CAMEL Bank's financial sustainability assessment method is quite common. It is a rating system for assessing credit institutions. The name of the method comes from the initial letters of the names of the five groups of coefficients:

"C" (capital adequacy) – capital adequacy ratios, which determine the size of the bank's own capital (which is a guarantee of bank reliability for depositors) and compliance with the real amount of capital required;

"A" (asset quality) – asset quality indicators that determine the degree of "return" of assets and off-balance sheet items, as well as the financial impact of problem loans;

"M" (management) – indicators of assessing the quality of management the bank, the policy pursued, compliance with laws and regulations;

"E" (earnings) – indicators of profitability from the standpoint of its sufficiency for future growth of the bank;

"L" (liquidity) – liquidity indicators, which assess the ability of the bank to meet timely requirements for payment of obligations and willingness to meet the need for a loan without loss.

After conducting basic calculations for each indicator group is assigned the number from "1" (good) to "5" (unsatisfactory). Five indicators develop and are divided by 5 to get a consolidated score. A consolidated assessment gives a clear idea of whether the bank is generally "good", "satisfactory", "suf-ficient", "critical" or "unsatisfactory". Most importantly, a consolidated score is an important indicator of the degree of intervention and have to be done by the supervisory authorities towards the bank. The main advantage of CAMELS is a standardized approach to assessing the sustainability of commercial banks. Assigning a rating to each of the analyzed indicators allows you to determine the direction of its further development, and a comprehensive assessment to assess the degree of intervention required by the management of the bank or supervisor. The disadvantage of the methodology is the subjective nature of expert assessments, which manifests itself in a high degree depending on the skill level of the expert [7].

Also, one of the methods of assessing the stability of the banking system is the interpretation of financial stability indicators (FSI), which provide an understanding of the financial status and reliability of banking institutions in the country. The International Monetary Fund provides them. Financial stability indicators characterize the current financial status and stability of the deposit-depository sector in conjunction with other sectors of the economy. The purpose of calculating and disseminating FSI is to evaluate and control financial systems in order to increase financial stability.

There are 12 basic and 14 recommended financial sustainability indicators. These indicators are divided into three main groups: on a capital basis, on the assets basis, and basis on incomes and expenditures (Table 2).

There are also other indicators of the stability of the banking system. Early warning indicators (EWIs) of banking crises are typically based on the notion that crises take root in disruptive financial cycles. The basic intuition is that outsize financial booms can generate the conditions for future banking distress. The narrative of financial booms is well understood: risk appetite is high, asset prices soar and credit surges. Yet it is difficult to detect the build-up of financial booms in real time and with reasonable confidence. It is here that EWIs come in. Many studies, including at the BIS, have found that one can identify such unsustainable booms reasonably well based on, say, deviations of credit and asset prices from long-run trends ("gaps") breaching certain critical thresholds.

In order to detect the build-up of vulnerabilities around the globe, in recent years the BIS has regularly published credit-to-GDP gaps, economy-wide debt service ratios (DSRs) and, less frequently, property price gaps.

The European System of Central Banks (ESCB) is leading the banking system in the EU. It is an international banking system consisting of a supra-national European Central Bank (ECB) and national central banks of 28 EU member states.

Table 1

Features distinguishing a stable banking system

Adjustment	Adjustment of the activities of each bank separately and banking activities in general.
Control	Centralized mechanism of control and regulation of bank reserves movement.
Infrastructure	System-wide infrastructure, which provides functional interaction of individual banks.
Independence	Flexible connection of a high level of centralized management of the banking system with full economic independence and responsibility for the performance of each individual bank.
Two-tier structure	A key feature of the traditional banking system of a market economy. At the first level is the central bank, which is responsible for solving macroeconomic problems in the monetary sphere, primarily maintaining the sustainability of national money and ensuring the sustainability of the functioning of the entire banking system. At the second level – commercial banks, through which the banking system serves the national economy in accordance with the tasks of the Central Bank.

Source: compiled by author on the basis of [5]

Indicators of financial stability

Regulatory capital to risk-weighted assets	This FSI measures the capital adequacy of deposit takers and is based on the definitions used in the Basel Capital Accord. According to Basel's normative values, the ratio of aggregate capital to assets at risk should be 8%. If the indicator exceeds the value, it is positive for the assessment of financial stability of the country.
Capital to assets	This FSI provides an indication of the financial leverage – that is, the extent to which assets are funded by other than own funds – and another measure of capital adequacy of the deposit-taking sector.
Nonperforming loans net of provisions to capital	This FSI is intended to compare the potential impact on capital of NPLs, net of provisions. Provided that there is appropriate recognition of NPLs, this ratio can provide an indication of the capacity of bank capital to withstand NPL-related losses. However, the impact of NPL losses on capital is uncertain in most circumstances, as, for various reasons, the lender might expect to recover some of the potential NPL losses.
Return on equity	This FSI is intended to measure deposit takers' efficiency in using their capital. Over time it can also provide information on the sustainability of deposit takers' capital position. The ratio needs to be interpreted in combination with FSIs on capital adequacy, because a high ratio could indicate high profitability and low capitalization, and a low ratio could indicate low profitability and high capitalization.
Large exposures to capital	This FSI is intended to identify vulnerabilities arising from the concentration of credit risk. Large exposure refers to one or more credit exposures to the same individual or group that exceed a certain percentage of regulatory capital, such as 10 percent. This supervisory tool is intended to be applicable at the level of the individual deposit taker.
Net open position in foreign exchange to capital	This FSI is intended to identify deposit takers' exposure to exchange rate risk compared with capital. It measures the mismatch (open position) of foreign currency asset and liability positions to assess the potential vulnerability of the deposit-taking sector's capital position to exchange rate movements. Even if the sector as a whole does not have an exposed foreign exchange position, this might not be true for individual deposit takers or groups of deposit takers, and thus peer group or dispersion analysis.
Gross asset and liability positions in financial derivatives to capital	These FSIs are intended to provide an indication of the exposure of deposit takers' financial derivative positions relative to capital. While a net matched position might suggest that the exposure is limited, counterparty risk is particularly relevant in the financial derivatives market, and thus it is important to monitor the magnitude of the gross positions.
Net open position in equities to capital	This FSI is intended to identify deposit takers' equity risk exposure compared with capital. Even if the sector as a whole does not have an exposed equity position, this might not be true for individual deposit takers or groups of deposit takers.
Liquid assets to total assets (liquid asset ratio)	This FSI provides an indication of the liquidity available to meet expected and unexpected demands for cash.
Customer deposits to total (noninterbank) loans	This FSI is a measure of liquidity, in that it compares the "stable" deposit base with gross loans. When stable deposits are low relative to loans, there is a greater dependence on more volatile funds to cover the illiquid assets in deposit takers' portfolios.
Return on assets (net income to average total assets)	This FSI is intended to measure deposit takers' efficiency in using their assets. It may be interpreted in combination with the FSI on return on equity described above.
Nonperforming loans to total gross loans	This FSI is intended to identify problems with asset quality in the loan portfolio. It may be interpreted in combination with the NPLs less specific provisions to capital ratio described above. An increasing ratio may signal deterioration in the quality of the credit portfolio.
Sectoral distribution of loans to total loans	This FSI provides information on the distribution of loans to resident sectors and to nonresidents. A large concentration of aggregate credit in a specific resident economic sector or activity may signal an important vulnerability of the deposit-taking sector to the level of activity, prices, and profitability in that sector or activity.
Residential real estate loans to total loans	This FSI is intended to identify deposit takers' exposure to the residential real estate sector, with the focus on household borrowers.
Foreign-currency-denominated loans to total loans	This FSI measures the relative size of the foreign currency loans within gross loans. Particularly in countries where domestic lending in foreign currency is permitted, it is important to monitor the ratio of foreign-currency-denominated loans to gross loans for residents because of the increased credit risk associated with the ability of the local borrowers to service their foreign-currency-denominated liabilities, particularly in the context of large devaluations or a lack of foreign currency earnings.
Interest margin to gross income	This FSI is a measure of the relative share of net interest earnings – interest earned less interest expenses – within gross income. This ratio may be affected by the deposit takers' capital to asset ratio, as for a given level of assets, higher capital results in lower borrowing needs, thus lowering interest expenses and increasing net interest income.
Trading income to total income	This FSI is intended to capture the share of deposit takers' income from financial market activities, including currency trading, and thus help in assessing the sustainability of profitability.
Noninterest expenses to gross income	This FSI measures the size of administrative expenses to gross income (interest margin plus noninterest income).

Source: compiled by author on the basis of [8]

At present, the regulation and supervision of the activities of banks in the EU are based on the rules of the Basel Committee on Banking Supervision. It was created in 1974 under the Bank for International Settlements in Switzerland by the leaders of the Central Bank of the "Group of Ten" countries (G-10). The main task of the Committee is the development and implementation of common standards in the field of banking regulation.

The main documents of the Basel Committee are "Fundamental Principles of Effective Banking Supervision" and a set of unified postulates and standards known as Basel I, Basel II and Basel III. These principles include a list of recommendations for licensing banking activities, the establishment of a system of criteria for determining the adequacy of bank capital, the formation of reserves for possible losses on loans, keeping records of banks in accordance with international standards.

The EU is in the process of implementation of the Basel III rules now, which appeared as a response to the global financial and economic crisis of 2008. They do not cancel and supplement the previous agreements, but are aimed at eliminating shortcomings of existing regulatory standards recognized by the international community.

The essence of the Basel III rules is to focus on three aspects of banking.

1) Strengthening the requirements for the quality of capital and the formation an "anti-cyclical buffer" of capital in order to accelerate capitalization processes; restraining super-fast growth of external borrowing of banks in the phase of economic growth; crowding out of the weak banks market; weakening competition and easing state control over the banking system, increasing the stability of the financial system as a basis for maintaining macroeconomic stability.

2) Implementation of leverage ratio at the level of 3%, coefficients of liquidity, which will reduce liquidity risks, increase competition for reliable sources of financing, make the banking system stronger. This should ensure a reduction in the risk of a debt crisis at the macro level.

3) Reforming mechanisms for guaranteeing population's deposits. It will increase competition in the deposit market, expand and improve the quality of the banks' resource base. It should increase confidence in the banking system, stimulate the savings process, and improve the conditions for the efficient operation of the transformation's mechanism of savings into investments.

Supervisory reforms are aimed at: banking regulation, which will increase the stability of individual banking institutions during periods of stress. Regulation of the national banking system – the system takes into account the risks accumulated in the banking sector.

"Basel-III" defines the specific terms for the introduction of innovations developed by it, since the standards cease to be only recommendations. They are requirements for banking institutions, whose failure to enforce strict sanctions by regulators.

Due to the entry into force of the new requirements of the Basel Committee, European banks are forced to strengthen their capital and liquidity reserves. As a result, on the basis of the ECB, a single bank regulator – the European Banking Union (EBU) – has been created, which allows the consistent application of uniform bank rules in the participating countries. New decision-making procedures and tools help create a more transparent, single, secure banking market. Since 2014, around 6,000 euro area banking institutions have gradually moved under its supervision.

The main objective of the Banking Union of the EU is to ensure intelligent, sustainable, inclusive economic growth, the efficient functioning of the EU internal market, the sustainable and efficient functioning of the banking system, and price stability.

From another point of view, the main objective of the Banking Union is the violation of the link between commercial banks and the national state, that is, the creation of such conditions in which banks will not be able to accumulate large amounts of national debt. These are large systemic banks, whose bankruptcy may lead to a sovereign default, and, as a consequence, to destabilize the banking sector of the euro zone as a whole. Banking Union consists of three mechanisms: the mechanism of banking supervision (2014); the only mechanism for dealing with problem banks (2016); Deposit Guarantee Program (2015).

The banking supervisory mechanism was established within the ECB and the Member States' financial control bodies to implement specific supervisory

Table 3

Differences between Basel II and Basel III

№	Indexes	Basel II	Basel III
1	Capital adequacy level 1, %	4	6
2	Capital adequacy of the basic level, %	2	4,5 (simple shares after deductions)
3	Capital Savings Buffer (CSB)	Absent	The creation of the CSB at an additional 2.5% will increase the required capital (in the form of common shares) to 7%
4	Anticyclic capital buffer (ACB)	Absent	The ACB varies in the range of 0 to 2.5% of ordinary shares or another type of capital to cover the full losses and is introduced taking into account national characteristics. Banks with a capital-to-asset ratio of less than 2.5% will be confronted with limited dividend payments, share repurchase and bonus payments.
5	Capital for systemically meaningful banks	Absent	Systemically significant banks must have capital to cover losses higher than adopted standards. Work on this issue continues work in the Council for Financial Stability at the Basel Committee.

Source: compiled by author on the basis of [10]

Table 4

Terms of implementation of Basel III in the members of the Basel Committee

Indicator	2013	2014	2015	2016	2017	2018	2019
Tier 1 capital base,%	3,5	4	4,5	4,5	4,5	4,5	4,5
Buffer capital,%			0,625	1,25	1,875	2,5	2,5
Anti-cyclical capital,%				0,625	1,25	1,875	2,5
Share capital and buffer,%	3,5	4	4,5	5,125	5,75	6,375	7
Capital adequacy ratio,%	8	8	8	8	8	8	8
Capital adequacy and buffer,%	8	8	8	8,625	9,25	9,875	10,5
Short-term liquidity ratio	Beginning of observations		Implementation of the international standard				
Indicator of net stable financing		Beginning of observations					

Source: compiled by author on the basis of [11]

and regulatory tasks related to the financial stability of the largest and most important Eurozone banks. In the context of legal regulation, it is based on Basel III, but with some more effective approaches to prudential supervision.

The mechanism of working with troubled banks is to provide an effective solution to the serious financial problems that banks may face. The mechanism of working with troubled banks has a single board and a single fund, which is formed by the contributions of member countries of the Banking Union to resolve crises. After the creation of the Uniform Council, the EU member states at the national level create Councils for dealing with problematic banks as independent institutions with the participation of the national Central Bank and the Ministry of Finance.

Conclusions. A stable banking system is characterized by centralized mechanism of control and regulation of bank reserves movement, system-wide infrastructure, flexible connection of centralized management of the banking system with full economic independence and two-tier structure.

There are several methods for assessing the stability of the banking system. CAMEL is a credit rating system for credit rating agencies. Another method of assessing the stability of the banking system is the interpretation of financial stability indicators (FSI), which provide an understanding of the financial status and reliability of banking institutions in the country. The FSI's are divided into three main groups: on a capital basis, on the assets basis, and based on income and expenditures. Another method is early warning indicators. EWIs of banking crises are typically based on the notion that crises take root in disruptive financial cycles. This special feature has formally assessed the performance of household and international debt as EWIs for banking distress.

While these aggregate indicators are useful, research has pointed to the importance of specific subcategories of debt as a source of vulnerabilities, especially household debt and cross-border and/or foreign currency debt (international short term debt). These variables are found to contain useful information about banking system vulnerabilities, similar to that of their more widely used counterparts based on aggregate debt. Within the group of householdbased indicators, the household debt service ratio stands out. Within that of international debt indicators, cross-border claims perform better than foreign currency debt [9].

The study of the the banking system in the EU as well as he role of the Basel Committee and the rules that are prescribed in the new Basel III revealed that the process of adaptation of banking regulation legislation to the norms adopted by the EU lays down a number of key areas for the development of the banking systems of the EU countries in the coming years. It should be noted that cross-border European integration, on the one hand, leads to the consolidation and interweaving of national markets for banking services, the emergence of new institutional forms at the regional and international levels, and, on the other, the domination of international institutions over national ones.

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Родіонова Т. А.
Янко Є. О.
Одеський національний університет імені І. І. Мечникова

ТЕОРЕТИЧНІ ОСНОВИ ФІНАНСОВОЇ СТІЙКОСТІ БАНКІВСЬКОЇ СИСТЕМИ

Резюме
Статтю присвячено теоретичним проблемам фінансової стійкості банківської системи. Розглянуто концепцію фінансової стійкості банківської системи, а також методи оцінки стабільності банківської системи та її регулювання. Представлено перелік індикаторів, таких як фінансова стійкість, раннє попередження та ін., які призначені для ідентифікації вразливості банківської системи. Особливу увагу приділено правилам Basel III та їх упровадженню в ЄС.
Ключові слова: банківська система, фінансова стабільність, показники фінансової стабільності, Базель.

Родионова Т. А.
Янко Е. А.
Одесский национальный университет имени И. И. Мечникова

ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ФИНАНСОВОЙ УСТОЙЧИВОСТИ БАНКОВСКОЙ СИСТЕМЫ

Резюме
Статья посвящена теоретическим проблемам финансовой устойчивости банковской системы. Рассмотрены концепция финансовой устойчивости банковской системы, а также методы оценки стабильности банковской системы и ее регулирования. Представлен перечень индикаторов, таких как финансовая устойчивость, раннее предупреждение и др., предназначенные для идентификации уязвимости банковской системы. Особое внимание уделено правилам Basel III и их внедрению в ЕС.
Ключевые слова: банковская система, финансовая стабильность, показатели финансовой устойчивости, Базель.