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INFLUENCE OF ACCOUNTING INFORMATION ON THE LEVEL OF FINANCIAL SECURITY OF SYSTEMICALLY IMPORTANT BANKS

Abstract. *Introduction.* Dynamics and inconsistency of market changes caused by the current stage of economic development induce the increased deregulation of cash flows in time and volume. The most important component of the reproductive relationships implementation mechanism is the banking system, so the main task should be prevention of financial danger for systemically important banks, which is the key to timely responding to accounting information signals.
Purpose of the article is development the approaches to determine the level of financial security of systemically important banks taking into account the influence of accounting information.
Results. Banking system has a specific role in the effective functioning of cash flow and the course of economic processes in the state, consisting in making payments, financing of other business entities and risk transformation. A key basis for the regulation of bank activity is accounting information, because it is the basis for the model development of multi-version management decisions which directly affect the level of financial security of systemically important banks. The accounting information allows determining the key stability indicators of banking sector. An effective tool to classify systemically important banks according to these indicators is trigonometric analysis, which graphically visualizes the results on the unit circle. That allows defining the level of financial security of systemically important banks and make comparisons between them. Among the mechanisms for providing the financial security of systemically important banks under the influence of accounting information signals, the decisive role have the mechanisms which operate at the level of a state and region, because they are the basis for the internal mechanisms development to increase the level of financial security of certain banks.
Conclusion. The key to raising the level of financial security of systemically important banks is development of effective accounting support and the financial risk management system that can respond to the dynamic change of updated information. The effective system creation of crisis early identification and prevention under the influence of accounting information signals allows the bank to implement timely the restructuring of its assets and liabilities in order to minimize the financial risks and provide the functioning stability of the banking system.
Keywords: financial security; anti-crisis management; financial risk; systemically important bank; accounting information.
JEL Classification: E58, G21, M41

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ВПЛИВ ОБЛІКОВОЇ ІНФОРМАЦІЇ НА РІВЕНЬ ФІНАНСОВОЇ БЕЗПЕКИ СИСТЕМНИХ БАНКІВ
Анотація. У статті обґрунтовано специфічну роль банківської системи в ефективному функціонуванні грошового обігу та перебігу економічних процесів у країні. Класифіковано системні банки за рівнем фінансової безпеки, який визначено на основі облікової інформації із використанням постулатів тригонометричного аналізу. Показано тісний зв'язок індикаторів банківських і валютних криз та їх роль у забезпеченні фінансової стабільності економічної системи. Розкрито механізми забезпечення фінансової безпеки системних банків із використанням облікових інформаційних сигналів. Запропоновано напрями підвищення рівня фінансової безпеки системних банків.
Ключові слова: фінансова безпека; криза; антикризове регулювання; фінансовий ризик; системний банк; облікова інформація.

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ВЛИЯНИЕ УЧЕТНОЙ ИНФОРМАЦИИ НА УРОВЕНЬ ФИНАНСОВОЙ БЕЗОПАСНОСТИ СИСТЕМНЫХ БАНКОВ

Аннотация. В статье обоснована специфическая роль банковской системы в эффективном функционировании денежного оборота и экономики страны в целом. Классифицированы системные банки по уровню финансовой безопасности, который определен на основе учетной информации с использованием постулатов тригонометрического анализа. Показана тесная связь индикаторов банковских и валютных кризисов, а также их роль в обеспечении финансовой стабильности экономической системы. Раскрыты механизмы обеспечения финансовой безопасности системных банков с помощью учетных информационных сигналов. Предложены направления повышения уровня финансовой безопасности системных банков.
Ключевые слова: финансовая безопасность; кризис; антикризисное регулирование; финансовый риск; системный банк; учетная информация.

Introduction. Providing of the economic agents' financial security underlies the instruments of financial risks management adaptation. Their imperfection is the cause of financial balance loss in the economics which leads to the negative financial and economic consequences. Dynamics and inconsistency of market changes caused by the current stage of economic development induce the increased deregulation of cash flows in time and volume that is clearly reflected in the economic indicators formed on the base of accounting information processing. And the specificity of financial risk manifestation on them brings the limits to economic agents' activities.

The most important component of the reproductive relationships mechanism implementation is the banking system which has a specific role in the area of risk transformation, other business entities financing and making payments: bank deposits capital characterizes the investment opportunities for the economy; loans determine the market demand and monetary character of most accounts. Therefore, the banks influence not only on the effective functioning of the money turnover, but also on the course of economic processes.

A key basis for the bank activity regulation is accounting information, because it is that fully discovers all aspects of the banking activity and enables to distinguish a phenomenon from a fact. It is the accounting information that is the basis for the model development of multi-version management decisions, which directly affect the level of financial security of systemically important banks that actualizes the further research in this direction.

Brief Literature Review. It should be noted that the financial security providing has been the subject of serious scientific research. Some aspects of the mentioned problem are presented by many scientists, among them are O. Baranovskyi (2009) [1], A. Lobanov (2009) [2], O. Trydid (2013) [3], D. Pyle (1997) [4], G. Maler (1996) [5], M. Lewis (1999) [6], A. Demirgus-Kunt, and E. J. Kane (2002) [7] and others. Most scientists investigate the certain aspects of theoretical regulations improvement and methodological approaches to overcome the crisis, the choice of anti-crisis management methods by the economic agents etc. However, the main task should be avoidance of the financial risk, which is the key to timely reaction to the accounting information signals.

The purpose of this paper is to develop approaches to the level of financial security determining of systemically important banks, reckoning with the influence of accounting information.

Results. The task of the financial security improvement of systemically important banks in developed countries rose extremely actual only in the last 15-20 years [2]. The reason of that is not the bankruptcy of some companies, banks and crisis of public finance in various countries which have occurred earlier, but the rate of cash flow imbalance and the extent with which they occur and spread.

Thus, the collapse of saving and loan associations in the USA had lasted for 20 years (1972-1992); American Orange County's investment pool in three years (1992-1994) increased its monthly losses from eligible 1.8% to threatening 5% from the total deposits [4], lost a total of 1.67 billion dollars. And for destruction of the bank Barings in 1995 it had taken only a few months that its loss amounted about 1.1 billion dollars [5]. Even more fleeting was the destruction of the hedge fund Long Term Capital Management (LTCM), which by the crisis in August 1998 had lost 2.1 billion dollars (47% of its assets value) for one month only. On August 21, 1998, this fund suffered losses in the amount of 550 million dollars, and on September 21, 1998 it lost another 500 million dollars [6]. But the largest event was the bankruptcy of the investment bank Lehman Brothers on September 15, 2008 that for one month had reduced 75 billion dollars of the total company value [7]. That resulted in a chain reaction of bankruptcies of the largest world banks. For their salvation, the governments of the world have spent 15 trillion euros in two years (it is one third of the global GDP in 2008) [8].

The financial crises existence and the specificity of its manifestation have brought the limits to the systemically important banks activities in the market. Firstly, the socio-economic crisis has financial consequences which are inherent in dynamic and contradictory transformation of the current state of the economy [9]. Secondly, the amount of available financial resources influences on the chosen methods and efficiency of financial security support, because the significant reason of negative transformations in the economy is a gap in the movement of appropriate financial resources of different economic entities [10]. Lack of financial resources implies to transition of economic agents to mutual crediting, growth of mutual non-payments and increase of accounts payables. On this base, it leads to the cost of servicing the cash flows' increase.

The accounting information allows determining the key stability indicators of banking sector: customer liabilities, net profit/loss and bank capital. An effective tool to classify systemically important banks according to these characteristics is trigonometric analysis, which graphically visualizes the results on the unit circle. Using this methodб it was determined the level of financial security of systemically important banks and the comparison between them was made.

For further analysis and data visualizationб we use the following geometric interpretation. Input data X (credit flow formed from liabilities of bank customers in % to net profit/loss of the bank) and Y (the coverage degree of client obligations by cash flows connected with formation of bank capital) are rationed as follows:

$$X^2 + Y^2 = Z^2 \Rightarrow \overset{0}{X} = \frac{X}{\sqrt{Z^2}} \Rightarrow \overset{0}{Y} = \frac{Y}{\sqrt{Z^2}} , \qquad (1)$$

were Z is index for normalization values of X and Y by Theorem of Pythagoras.

In this case the value $\overset{o}{B}$ (Figure) can be interpreted as the radius of the unit circle. Then, the credit support of financial establishment (formation of resource base for credit operations)

can be shown as the radius vector of unit length. For its image on the circle we compute the value φ:

$$\varphi = arctg \frac{\overset{0}{Y}}{\overset{0}{X}}. \qquad (2)$$

Defining the arctangent of an angle, we represent the position of bank as point, and graphically displayed it on the trigonometric circle (Figure). Then, the credit support of bank establishment where $X = Y$ is equal in Figure 1 to an angle $\varphi = \pi / 4$, i.e. 45% (in Figure it is Line OB^0). More about this is in the research [11]. The practical meaning is determined by using the proposed in the study approach that allows obtaining the quantitative and graphic assessment of the bank's financial security.

This classification confirms the conclusion of the National Bank of Ukraine by results of recent stress-test: most systemically important banks require capitalization to avoid the crises phenomena.
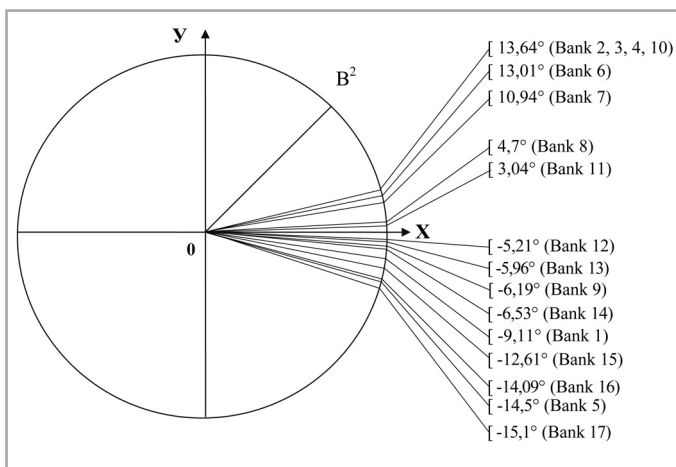

Figure: **Classification of systemically important banks by the level of financial security, 2013**
Source: Own development

In the study [2, p. 789-797], it is shown the close relationship of indicators of banking and currency crises. Thus, from 12 indicators of currency crises and 14 banking crises indicators, 11 are common. In the study [12, p. 120-127], from 25 warning indicators 19 are common. However, the authors [11, p. 32] proved that the specified content of factors is different because: firstly, countries can export (import) a different set of goods and services and therefore be exposed to a variety of trade «shocks»; secondly (as described in [2, p. 349]), the stability of the state financial system directly depends on the institutional features of legal regulation of economic activity. When we consider the financial stability of the system in the study [2, p. 18], we mean a situation in which the system is able to fulfill satisfactory three key functions at the same time. First of all, the financial system is effectively and continuously contributes to the inter-temporal resources allocation from saving owners to investors and the distribution of economic resources in general. Secondly, the financial risks for the future are determined and evaluated by reasonable accuracy and also are relatively well managed. Thirdly, the financial system is in such condition that it without effort can absorb the financial and real economic unexpected events or shocks.

According to the research [1, p. 113-201], the main factor influencing the financial risk is the rapid development of financial derivatives. The total mass of derivatives traded in the world (many of them have been derived from other derivative instruments) is often compared with the inverted pyramid based at the foundation of real production. This analogy allows visualizing that even a weak or insignificant basis fluctuation, such as the state of real sector, implies the volatility of «superstructure», which is derivatives market. These fluctuations certainly have a strong inverse effect on the producers of goods and services who increasingly use the derivative instru-

ments not only for hedging of their positions, but also for the speculative profit gaining.

In the USA on December 01, 2008 the total amount of derivatives was accounted for $684 trillion, while the GDP for that year was $14.4 trillion and the global GDP was respectively $60.2 trillion. That means that only the USA derivatives exceeded the global GDP in 11 times. If we consider the world in general, according to the sources [13; 14], in December 2009, the total external debt of all countries amounted to $56,900,000 million, meanwhile the total gold reserves of all countries were $10 008.392 million which means that the gold and currency reserves covered only 0.18% of the external debt, excluding the domestic one.

In addition, with the increasing financial derivatives complexity, correct accounting evaluation of their market value is complicated [15], and therefore timely prevention of risks related with them is vital. In the research [16, p. 53] it is stated that the ways of increasing the company's market value and shareholders' welfare are inseparably linked with the improvement of the financial flows anti-crisis management system as a guarantee of the financial security improving, because predicted discounted cash flows determine the value of the company. This is confirmed in the research [17, p. 155], where is stated that the cash flow management system is directed to balance the financial resources circulation.

Under conditions of the financial markets high volatility, even the central banks of developed countries, which have significant owned capital and sustainable financial position, can be a subject of global external shock that may change the character of risks of their assets and liabilities. Such a situation even faced the Central Bank of Switzerland during the global financial crisis.

The stability of functioning and the financial security are the main requirements which the international community proposed for the banking systems and it distinguish itself from any other sector of the economy. Accordingly, in case of their absence, the special urgency gets development of the measures to improve the financial security level of systemically important banks taking into consideration the accounting information [18]. Of course, the quality of legal functions execution by a central bank in any case should have priority over the possible financial losses of the banks. Instead, according to the law, the central banks of the countries carry their costs from their own revenues. This is a collision, because the conflict of interest of the state and society from the one hand, and the central bank – from the other, under certain conditions can directly affect the economic security of the state. Also, the banking system development is influenced, from the one hand, by the desire for the largest efficiency from the side of its members (represented by commercial banks) and the desire for the largest stability from the side of society as a whole (represented by the state) [9].

The mechanisms for the financial security providing of systemically important banks are quite various. Depending on the sources of accounting information, it is convenient to consider them by the hierarchical levels of acceptance and area of usage. It should be noted that these mechanisms don't operate isolated but are in a complex relation with each other. In practice, they can be applied in different combinations and with different efficiency, meanwhile the decisive role in the financial security of systemically important banks providing have the mechanisms which operate at the level of the state and area (Table).

As a result of long evolution, the formed system of the financial security state support of banking in the developed Western countries is based at three fundamental mechanisms: the minimum capital adequacy of bank capital, the limited liability of bank shareholders by liabilities before creditors, and government deposit insurance. That means that the directions for the level of financial security of systemically important banks improving as functions of governance management should be:
1) banks' financial stability;
2) banks' credit level increase;
3) money circulation organizing;
4) the deposits protection of individuals.

Table: **Mechanisms for the financial security of systemically important banks providing under the influence of accounting information signals**

Level	Macro-level (government level)	Meso-level (level of the banking system)	Micro-level (level of certain banks)
Main institutions	Supreme organs of government	Legal regulations of the government supervisor (the National Bank of Ukraine) and supranational institutions, regulations and standards, developed and free accepted by the participants	In addition, can also be used own, internal mechanisms for the financial security providing
Mechanisms	Main: 1) restrictions on the structure of bank portfolios; 2) national insurance; 3) volume of responsibility of bank owners to creditors for liability. Auxiliary: 1) restrictions on entry into the industry, expansion, mergers and acquisitions; 2) the order and procedures of bankruptcy and banks liquidation; 3) restrictions on the maximum volume of deposit rates and fees.	1) the minimum volume, requirements to the structure and rules of adequacy of the bank capital; 2) the liquidity rules of the bank balance and loans concentration; 3) the measures of prudential supervision of regulatory authorities with observance of the mandatory standards; 4) the requirements for information disclosure about financial bank position; 5) the conventional measures of quantitative assessment of the banking risks, methods of their calculation and / or regulatory requirements for the methods; 6) the standards of organization and activity of services of internal control and risks in bank management that are recommended by the supervisors.	1) methodologies for credit rating of debtor and for internal models for credit risk of loan portfolios; 2) internal models of market risk quantitative assessment for trading bank portfolios; 3) the applied strategies of market, credit, operational and other risks restrictions.

Source: Own development

Conclusions. The level of financial security of systemically important banks is associated with: firstly, development of effective accounting support that can respond to the dynamic change of updated information; secondly, optimization of sensitivity of the bank value to the change of discount rate; thirdly, the financial risk management system. For each country should be chosen a specific set which is liable to regular monitoring of financial, macroeconomic and institutional variables that affect the state of the banking sector and the exchange rate stability. Creating of the effective system of early identification of the threat of currency and banking crises under the influence of accounting information signals allows the bank to implement its assets and liabilities restructuring in time, so as to minimize the financial risks. At the same time, the effective mechanism for the financial security of systemically important banks development providing is very complex issue and it is prospective for further research.

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