

FINANCIAL SECTOR STABILITY: ESSENCE AND ASSESSMENT

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The article investigates approaches to the interpretation of the notion "financial stability" and the features of its assessing as an important instrument of macro-prudential financial supervision. It is emphasized that the existing tools for assessing the financial sector stability have their advantages and disadvantages, which are defined by the authors. In the paper there applied the method of convolution of criteria to assess financial stability in Ukraine. The calculation of the composite indicator is based on values of financial soundness indicators determined by the IMF, which for the purpose of the research are divided into three groups. As a result the indicator of financial stability includes the components of capital adequacy, credit risk and liquidity. It allows using the regression procedure for evaluation of the influence of these components on financial stability of the country. The interpretation of the results indicate that raising the level of financial stability in Ukraine requires, first, improving approaches to managing credit risk, then increasing liquidity rates and, ultimately, improving the capital adequacy of financial intermediaries.

Keywords: financial stability, financial sector stability, financial soundness indicators, composite indicator of financial sector stability.

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Кремень В. М., Оголь Д. О. Стійкість фінансового сектора: сутність та оцінювання

Досліджено підходи до тлумачення сутності поняття «фінансова стійкість» та особливостей її оцінювання як важливого інструменту макропруденційного фінансового нагляду. Акцентовано увагу на тому, що наявні інструменти для оцінки надійності фінансового сектора мають переваги та недоліки, які були визначені авторами статті. У роботі застосовано метод згортки критеріїв для проведення оцінки стійкості фінансового сектора України. Обчислення композитного індикатора здійснюється виходячи із значень індикаторів фінансової стійкості, які були поділені на три групи. В результаті композитний індикатор включає компоненти достатності капіталу, кредитного ризику та ліквідності. Такий підхід дозволив використати регресійний інструментарій для визначення впливу цих компонентів на стійкість фінансового сектора країни. Отримані результати засвідчили, що спочатку підвищення рівня фінансової стійкості в Україні потребує покращення підходів до управління кредитним ризиком, потім – збільшення норм ліквідності та, зрештою, поліпшення достатності капіталу фінансових посередників.

Ключові слова: фінансова стійкість, стійкість фінансового сектора, індикатори фінансової стійкості, композитний індикатори стійкості фінансового сектора.

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Кремень В. М., Оголь Д. А. Устойчивость фінансового сектора: сущность и оценивание

Исследованы подходы к толкованию сущности понятия «финансовая устойчивость» и особенностей ее оценки как важного инструмента макропруденциального финансового надзора. Акцентировано внимание на том, что имеющиеся инструменты оценивания устойчивости финансового сектора имеют преимущества и недостатки, которые были определены авторами статьи. В работе применен метод свертки критериев для проведения оценки устойчивости финансового сектора Украины. Расчет композитного индикатора осуществляется исходя из значений индикаторов финансовой устойчивости, которые рассчитываются МВФ, и для целей исследования были разделены на три группы. В результате композитный индикатор включает компоненты достаточности капитала, кредитного риска и ликвидности. Такой подход позволил применить регрессионный инструментарий для определения влияния этих компонентов на устойчивость финансового сектора страны. Полученные результаты показали, что сначала повышение уровня финансовой устойчивости в Украине требует совершенствования подходов к управлению кредитным риском, затем – к увеличению норм ликвидности и, в конце концов, улучшению достаточности капитала финансовых посредников.

Ключевые слова: финансовая устойчивость, устойчивость финансового сектора, индикаторы финансовой устойчивости, композитный индикаторы устойчивости финансового сектора.

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Introduction. Analysis of the financial sector stability in the context of macroprudential financial supervision has become extremely important today, as new and powerful waves of financial crises showed that both theory and practice of macroprudential financial supervision failed to grasp the phenomenon of financial stability and apply the systemic approach to identifying the mechanisms that violate it. At a country level, this hampers effective and well-grounded selection of preventive actions by supervisory and regulatory bodies, whereas financial stability at an international and global level is hardly attainable.

Assessment of financial stability involves analysis of the financial sector capacity to ensure the balanced economic development under effects of various internal and external shocks. Conventional theoretical and methodological tools for the analysis are based on studies of the ratios between the financial sector parameters. The number of the parameters can change over time depending on the structure of the financial sector and significance of its components in a given period.

Therefore, development of theoretical and methodological tools for assessing financial stability is complicated due to the structuring of an object under study, which is the financial sector, and due to underdeveloped systems for statistical observation of its components.

The aim of the article is to study the essence of financial stability and improvement of its assessing by compiling composite indicator and evaluating the influence of capital adequacy, credit risk and liquidity on financial stability.

Presentation of basic material of the research. Problems of the financial sector stability have long been subject to intensive theoretical and practical studies in the field of finances, but financial stability does not have a simple or universally accepted definition. The conventional approach to defining the meaning of the notion “financial stability” in the financial supervision practice today is its interpretation by a set of criteria.

The critical analysis of approaches to interpretation of the essence of the concept “financial stability” in the financial science and supervisory practice in Ukraine and former Soviet countries showed that financial stability is considered at different levels – a feature of the financial system, financial sector, monetary system, banking system, national and global economy.

Experts of the Research Centre of the National Bank of Ukraine (V. Mishchenko, O. Kireeva, M. Shapovalova, 2005) believe that financial stability is a state of a dynamic financial system in which any shocks to the financial system (or some of its elements) do not affect the effective reallocation of financial resources and a system for making payments in the economy. They also emphasized the ability of the financial system to absorb and mitigate these shocks. They posited that financial stability has a great influence on the economy – it has effect on stable economic development, improving welfare and social

protection, termination of demographic and intellectual degradation, prevention of negative impact of prices for real and financial assets [11].

The Strategy for Development of the Financial Sector of Ukraine until 2015 (2009) states that financial stability is sustainable development of the financial sector and its ability to lessen impact of other countries upon the financial policy of Ukraine and combat global financial threats. However, the document does not state the methodology for assessment of financial stability [5].

P. Kallaur (2007) defined financial stability as a property of the financial system to return to an equilibrium state after removing the impact that brought it out of this state. He found that the monetary and financial stability should become the main goal of the central banks. In addition, financial stability means development of the banking system and effective and secure payment system [9].

I. Shkolnik (2008) claimed that a stable financial system has three significant features. First, it facilitates the allocation of financial resources in space and time as well as other financial and economic processes, such as storing and investing, lending and borrowing, maintaining the liquidity, pricing of assets, which results in increasing the productivity of the economy and improving the well-being of each member of the society. The second feature of a stable financial system is its ability to evaluate and mitigate financial risks. The last feature implies the potential of the financial system to perform the mentioned functions even in the face of political, social, economic upheavals; external financial instability; strengthening of some imbalances in the economy. This definition is notable in interpreting the linkage between financial stability and the real sector and emphasizing the key functions of the financial system [15].

In the paper of experts from the Institute for Economy in Transition (S. Drobyshevsky, P. Trunin, A. Paliy, A. Knobel, 2006), there analysed factors influencing the financial sector and causing its imbalance, including banking panic, irresponsible behaviour of banks, information asymmetries, effect of contagion, and fluctuations of asset prices in financial markets [3].

According to B. Pshyk (2013), the most common approaches to interpreting financial stability are direct and inverse. The direct approach defines a set of functions and features of the financial system in a stable condition. In accordance with the inverse approach, financial stability is the absence of instability [13].

M. Foot (2003) developed the concept of financial stability and stated that we can speak about financial stability of a country if there is monetary stability, employment levels close to the economy’s natural rate, confidence in the operation of the generality of key financial institutions and markets in the economy, there is no relative price movements of either real or financial assets within the economy. His definitions accentuated the importance of monetary stability and confidence of players in financial market [6].

G. Schinasi (2004) suggested that the financial system operates within a corridor where stability and instability are at the opposite ends. He came up with the idea that financial stability is a range of states of the financial system [14].

Some authors (E. Kozarević, N. Polić, A. Perić, 2017) discussed the issues concerning liberalization and regulation in the process of bank-oriented financial system transformation in developing countries. They found out that the key to success is in determining the appropriate balance between the level of financial liberalization and a sufficiently flexible and effective regulatory framework [10].

A. Crockett (1997) described financial stability as a stable state of financial institutions and financial markets. It requires that the key institutions in the financial system are stable, in that there is a high degree of confidence that they can continue to meet their contractual obligations without interruption or outside assistance; and the key market are stable, in that participants can confidently transact in them at prices that reflect fundamental forces and do not vary substantially over short periods when there have been no changes in fundamentals [2].

According to R. Ferguson (2003), the divergence of financial asset prices from fundamentals; distortion of market functioning and credit availability, domestically and perhaps internationally; and noticeable deviation in aggregate spending are the main reasons for financial instability [4].

T. Padoa-Schioppa (2002) proposed defining financial stability as a condition where the financial system is able to withstand shocks without giving way to cumulative processes which impairs the allocation of savings to investment opportunities and the processing of payments in the economy. He also emphasizes the significance of shock-absorbing capacity of the financial system and carrying out its key functions [12].

J. Chant (2003) proposed distinguishing financial instability from other kinds of macroeconomic instability. He pointed out that financial stability is the opposite of financial instability, that is, a situation in financial markets, which interferes or threatens an economic activity. Finally, J. Chant suggested that price volatility and changing conditions are the main features of financial markets and it could not be a source of financial instability [1].

Our review of theories and methods for interpreting the notion «financial stability» gives grounds to conclude that, first, the definitions feature apophaticism, meaning that the analysis is based on the method of contraposition, with financial stability defined as absence of financial instability. Second, the definitions tend to characterize the economic impact of financial stability (or financial instability) rather than the meaning and essence of stability of the financial sector.

The most comprehensive and substantiated approach to defining financial stability is the one contained in the International Monetary Fund Working Paper «Toward a Framework for Safeguarding Financial Stability», where the financial stability is interpreted as the condition or the situation in the financial sector that allows for effective and timely redistribution of financial resources, adequate evaluation of risks and effective risk control, absorption of financial shocks, suggesting the capability of the financial sector to absorb financial shocks without essential stresses (Houben, Kakes, Schinasi, 2004) [7].

The studies of algorithms for the financial sector assessment show that the system of financial soundness indicators is the best elaborated and most conventionally used one. We believe that the system of financial sustainability indicators should be constructed base on several sequential phases: constructing an information base containing indicators to be used to produce indicators of financial sustainability and monitor the financial sector; inventorying indicators, setting the periodicity and sources of their production, building an information base; setting limit values of indicators. It should be noted that setting limit or normative values of indicators remains to be the least elaborated point.

For assessing and supervising the stability and strength of the financial system as part of macroprudential analysis, the IMF has developed a system of financial soundness indicators (FSIs). According to the IMF, FSIs are a set of indicators measuring the current financial health and strength of financial institutions in a country and their agents, which are corporations and households. They include aggregated information characterizing the performance of individual institutions and indicators characterizing the functional markets of these financial institutions.

According to IMF, analysis of tender spots of the financial system covers:

- an extended set of indicators: 12 main and 10 recommended indicators pertaining to the performance of depository corporations, which measure the sufficiency of capital in banking institutions, quality and structure of assets and liabilities, liquidity, profitability rate, credit and market risks;
- performance indicators of other financial corporations (insurance companies, pension and investment funds, bond dealers and other financial intermediaries), measured as the ratio of their assets to the total financial sector assets and GDP;
- indicators of soundness of non-financial corporations (corporate clients of banking institutions), which measure debt burden, profitability rate of capital, capability to repay interests and debt, capability to take currency risk, and dynamics of bankruptcies in this segment;
- indicators of soundness of households (private clients of financial institutions), measured as the ratios of the total amount of households' debt on consumer and mortgage loans to GDP, and the total households' expenditures to serve these loans to the households' total income;
- indicators of market liquidity for analysis of the bond market performance;
- parameters of the real estate market: prices on commercial and dwelling estate and shares of mortgage loans and commercial loans in total loans [8].

The results of the detailed analysis of the FSIs proposed by the IMF and experiences of their applications in many countries allowed us to outline their weaknesses and strengths. The strengthens are the quarterly and annual basis of calculations, relation of the indicators not only to performance of the financial sector but also to performance of non-financial corporations, households and the real estate market, use of the

indicators as systems for early detection of potential financial stresses. The disadvantages are that the calculation of most of the indicators is impossible or difficult. Another drawback is that most of the indicators to some extent duplicate each other.

For the purpose of our research, we propose using a regression procedure to obtain standardized coefficients. At the beginning, we selected some financial soundness indicators and divide them into three groups (Figure 1).

To ensure a direct correlation between the indicators and the level of financial stability, there should be calculated inverse values for FSI 3, FSI 4, FSI 23 and FSI 24. Then the standardized value is calculated using the following formula:

$$c_n^t = \frac{x_{it} - \min(x_i)}{\max(x_i) - \min(x_i)} \quad (1)$$

The resulting indicator is calculated by multiplication of the sums of financial soundness indicators of three groups:

$$FSCI_t = \sum CA \times \sum CR \times \sum L, \quad (2)$$

where $FSCI_t$ is the composite indicator of financial sector stability;

$\sum CA$, $\sum CR$ and $\sum L$ are the sums of standardized values of the indicators of capital adequacy, credit risk and liquidity.

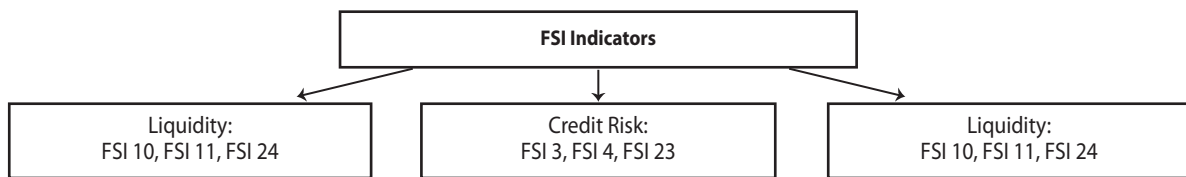


Fig. 1. The groups of financial soundness indicators

Source: Developed by the authors

On the basis of the regression procedure, the correlation between the composite indicator of the financial stability of the country and the capital adequacy, credit risk and liquidity components can be formalized:

$$FSCI = a_0 + a_1CA + a_2CR + a_3L. \quad (3)$$

Using the standardized regression coefficients, we estimate the model:

$$FSCI = k_1CA + k_2CR + k_3L, \quad (4)$$

where k_1 , k_2 and k_3 are standardized coefficients:

$$k_1 = a_1 \frac{\sigma_{CA}}{\sigma_{FSCI}}; \quad (5)$$

$$k_2 = a_2 \frac{\sigma_{CR}}{\sigma_{FSCI}}; \quad (6)$$

$$k_3 = a_3 \frac{\sigma_L}{\sigma_{FSCI}}. \quad (7)$$

It should be noted that standardized coefficients indicate the number of standard deviations by which financial stability composite indicator will change in an increase or decrease in the value of the capital adequacy, credit risk or liquidity component for one standard deviation. Thus, the influence of capital adequacy, credit risk and liquidity on the financial stability of the country can be ranked.

Due to the low level of financial stability in Ukraine the abovementioned approach to the estimation of the influence of capital adequacy, credit risk and liquidity on the financial stability was implemented on the basis of selected quarterly values for 9 FSI for this country in the period of I quarter 2008–I quarter 2017 (Fig. 2). The data taken from IMF were used for the calculation of financial stability and the sums of standardized values of indicators of capital adequacy, credit risk and liquidity.

These values allowed us to estimate the linear regression for evaluating the correlation between the level of financial stability and capital adequacy, credit risk and liquidity:

$$FSCI = -2.25 + 0.90CA + 0.93CR + 1.39L, \quad (8)$$

(0.22) (0.12) (0.08) (0.13)

(p < 0,05) (p < 0,05) (p < 0,05) (p < 0,05)

The regression statistics show that the correlation between the level of financial stability and capital adequacy, credit risk and liquidity is strong: Multiple correlation coefficient $R=0.946$, $R\text{-squared}=0.896$. F-statistic equals to 94.54 and is higher than the theoretical one. Therefore, the model is statistically significant. The standardized linear regression is as follows:

$$FSCI = 0.42CA + 0.68CR + 0.61L. \quad (9)$$

Thus, we obtained the standardized coefficients. The interpretation of the coefficients indicates that an increase in the capital adequacy component for one standard deviation results, on average, in an increase of the composite indicator of financial stability of Ukraine by 0.42 points, an increase in the credit risk component for one standard deviation results, on average, in an increase of the composite indicator by 0.68 points. An increase of the credit risk component for one standard deviation leads to an increase of the composite indicator of financial stability by 0.6. Therefore, raising the level of financial stability in Ukraine requires, first, improving approaches to managing credit risk, then increasing liquidity rates and, ultimately, improving the capital adequacy of financial intermediaries.

Conclusion. Financial stability is the condition of the financial sector when the effects of any kind of shocks do not hinder effective redistribution of financial resources across the economy and absorption of shocks.

The constructed system of the FSIs is the most common approach to assessing the financial system stability. The as-

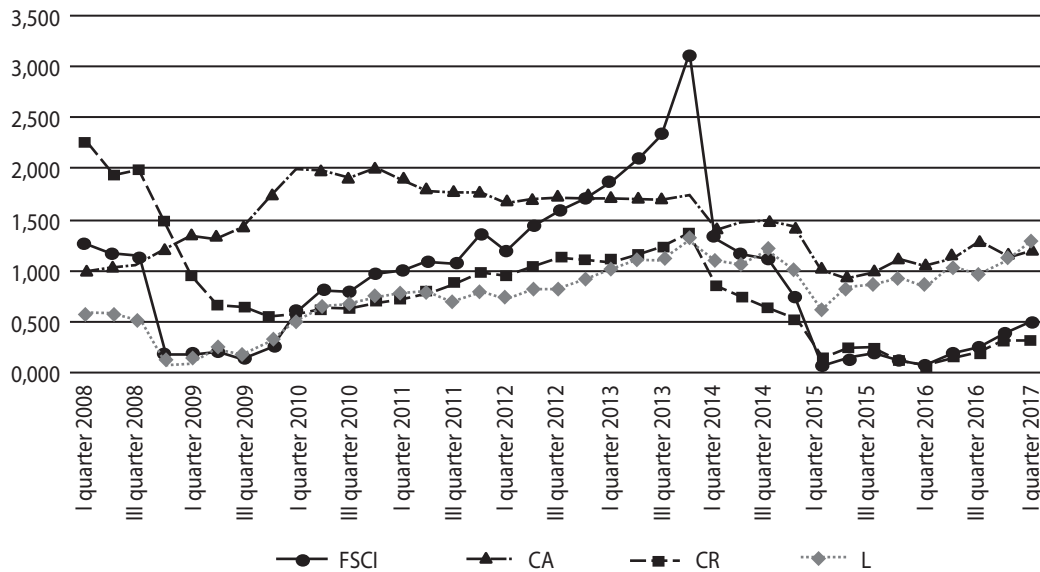


Fig. 2. The composite indicator of financial stability in Ukraine, I quarter 2008 – I quarter 2017

Source: Developed by the authors based on [16]

assessment of financial stability for Ukraine could be expanded by compiling composite indicator and estimating the influence of capital adequacy, credit risk and liquidity over financial stability.

By using methodological tools of regression statistics in assessing the financial sector stability, it is proved that although the financial sector in Ukraine is unstable, the situation could be improved primarily by developing credit risk management and increasing liquidity rates.

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