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**COUNTERCYCLICAL CAPITAL BUFFER AS A MACROPRUDENTIAL
TOOL FOR REGULATION OF THE FINANCIAL SECTOR**

Financial crisis in 2008–2009 revealed serious imbalances in the existing system of prudential supervision in financial sector and has accelerated scientific efforts to developing efficient tools aimed at reducing the procyclicality of financial systems. The objective of this research is to develop the scientific and methodical approach of forming/releasing the countercyclical capital buffer (as a macroprudential tool) to smooth financial cycles. The results of the research have proved that the formation of countercyclical capital buffer in Ukraine must have occurred when the financial sector approached the edge (continuum) of financial instability (2006–2008), and released – during the phase of financial instability (2009–2010), which might amortized the credit crunch of Ukrainian economy.

Keywords: countercyclical capital buffer; financial sector; financial imbalances.

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КОНТРИКЛІЧНИЙ БУФЕР КАПІТАЛУ
ЯК МАКРОПРУДЕНЦІЙНИЙ ІНСТРУМЕНТ
РЕГУЛЮВАННЯ ФІНАНСОВОГО СЕКТОРУ ЕКОНОМІКИ

У статті показано, що фінансова криза 2008–2009 рр. виявила суттєві недоліки в існуючій системі пруденційного нагляду за фінансовим сектором економіки і прискорила наукові зусилля з розробки дієвого інструментарію, спрямованого на зниження проциклічності фінансової системи. Для цього розроблено науково-методичний підхід до формування/вивільнення контриклічного буфера капіталу (як макропруденційного інструменту) задля згладжування фінансових циклів. Доведено, що в Україні формування контриклічного буфера капіталу мало відбуватися в період наблизення фінансового сектора економіки до межі фінансової нестабільності (2006–2008 рр.), а його вивільнення – на фазі фінансової нестабільності (2009–2010 рр.), що дозволило б замортузувати кредитне стиснення в економіці України.

Ключові слова: контриклічний буфер капіталу; фінансовий сектор; фінансові дисбаланси. *Форм. 2. Табл. 1. Рис. 1. Літ. 10.*

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КОНТРИКЛИЧЕСКИЙ БУФЕР КАПИТАЛА
КАК МАКРОПРУДЕНЦИАЛЬНЫЙ ИНСТРУМЕНТ
РЕГУЛИРОВАНИЯ ФИНАНСОВОГО СЕКТОРА ЭКОНОМИКИ

В статье показано, что финансовый кризис 2008–2009 гг. выявил существенные недостатки в существующей системе пруденциального надзора за финансовым сектором экономики и ускорил научные усилия по разработке действенного инструментария, направленного на снижение проциклличности финансовой системы. Для этого разработан научно-методический подход к формированию/высвобождению контрикллического буфера капитала (как макропруденциального инструмента) для сглаживания финансовых циклов. Доказано, что в Украине формирование контрикллического буфера капитала должно было происходить в период приближения финансового сектора экономики к границе финансовой нестабильности (2006–2008 гг.), а его высвобождение – на фазе финансовой нестабильности (2009–2010 гг.), что позволило бы самортизировать кредитное сжатие в экономике Украины.

Ключевые слова: контрикллический буфер капитала; финансовый сектор; финансовые дисбалансы.

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Introduction. The financial sector performance and maintaining its soundness depends to a certain degree on the system of financial regulation and supervision of the activity of structural elements of this sector of the economy. Financial crisis of 2008–2009 revealed obvious drawbacks in micro-prudential approaches of central banks to identify financial imbalances in their volume, terms, sources of attraction/allocation of financial resources, which in turn acted as accelerators of speculative price rise on financial assets and the level of system financial risks in national economies. Peculiarities of endogenous accumulation of financial imbalances signify that financial sector is not inclined to form additional capital and liquidity reserves during favorable periods, that is when it can be done easier and cheaper (Vasilyeva, Leonov & Lunyakov, 2013; Lunyakov, 2013). Attempts of state regulators to decrease individual imbalances and risks of financial institutions led to further accumulation and gradual erosion of the quality level of banking capital (Mischenko & Neznamova, 2011). International banking community makes consolidated efforts to work out the methods of effective countercyclical policy. However, scientific methodological aspects of macroprudential instruments application in Ukrainian economy remain the object of discussions and require further formalization.

Latest research and publications analysis. The issues of working out and implementation of macroprudential policy, formalization of its scientific instrumental apparatus are discussed in the works of many foreign and national scientists. First of all, groundwork of the Basel Committee on Banking Supervision (Committee) is to be mentioned. In particular, the goal of the reform package "Basel III" is to increase the capability of the banking sector to absorb shocks, connected with financial and economic stresses regardless of their source. That will allow decreasing the risks of these shocks moving to the real sector of the economy (Bank for International Settlements, 2010).

Among the relevant macroprudential instruments the use of which will increase the banking sector soundness to shocks during the period of credit crunch, the Committee distinguished: capital conservation buffer, countercyclical capital buffer (CCB) and leverage index. Specialists of the Bank for International Settlements, in particular M. Drehmann et al. (2010; 2011), Bank for International Settlements (2010) paid special attention to working out the concept for the CCB application as macroprudential instruments for the regulation of the financial sector.

The issues of macroprudential policy realization are also investigated in the scientific works of national scientists, in particular Zh. Dovgan (2011), S. Mischenko (2011), Q. Petrik (2013) etc. In total, national scientists reveal the economic essence and the world experience in realization of general provisions of macroprudential surveillance.

Unresolved issues. Among them are the formalization of scientifically based approach to formulation of the rule of formation/release of CCB that takes into account the peculiarities of cyclical development of the financial sector of Ukrainian economy.

The aim of the research is to work out a scientific methodological approach to formalization of the CCB application with peculiarities of the cyclical development of the financial sector.

Key research findings. Credit booms and extraordinary assets price rise intensify the following economic recession in the presence of financial stresses. Moreover, by means of the financial acceleration mechanism the shocks projected into the real sector of economy return to the financial sector with higher intensity. Such intersectoral relations form new demands to defense mechanisms of the financial sector. During the periods of economic expansion ("good times") banking sector must provide itself with additional capital that will play the role of the "liquid pillow" during the periods of financial stresses ("bad times") (Drehmann et al., 2010). Profit extraction from banking institutions to form such capital will lead to credit cost increase, its demand weakening and ensure excessive growth of credit portfolios.

In accordance with the provisions of Basel III national regulators must perform growth monitoring of credit proposal and other indicators that may signalize system-wide risk rise (Bank for International Settlements, 2010). It should be clearly understood when a credit proposal becomes excessive, in other words dangerous, from the point of view of possible losses in the soundness of the financial sector influenced by shocks. Based on these evaluations, during the period of excessive credit expansion regulators realize the corresponding demands to banking institutions as to the CCB formation. If a specific bank has not formed the necessary buffer size, restrictions to the use of undistributed profit (to dividends, purchase of securities, bonuses) come into effect, while free funds are directed to form the buffer (Drehmann et al., 2010).

Depending on the degree of credit expansion and formation of system-wide risks, the size of the CCB varies from 0 to 2.5% from the amount of assets evaluated with the account of risk (Bank for International Settlements, 2010). Formation/release of the CCB is based on the monitoring of a specific macroprudential index or a group of indices by national regulators. The indices can be used to evaluate the critical risk level during excessive credit expansion and thus to formulate the rule of the CCB application. Today specialized economic literature gives no universal approach to the choice of macroprudential dynamic instrument application rule. In particular, the Committee offered the regulators to use the indicator of credit imbalances (the overall credit sum issued into the economy to GDP ratio) during the formation/release of the CCB. However, the mentioned indicator has restrictions on its practical application, namely, it is procyclical (in terms of GDP decrease), it does not reflect imbalances between attracted resources and offered credits (liquidity imbalances), there have not been formalized range limits of its changes that would allow defining the terms of formation/release of the CCB.

Key principles of formation/release of the CCB are given in Table 1.

It should be noted that CCB is not meant to be used as an instrument of economic cycles and assets price management (Bank for International Settlements, 2010). For these purposes such management instruments as fiscal and monetary policies can be used. At the same time it should be understood that decisions on CCB are made after the evaluation of necessary macroeconomic, financial, and supervisory information. These decisions will have projections on the realization of fiscal and monetary policies in the country.

In contrast with the offers of the Bank for International Settlements and the Committee regarding the use of "Credits/GDP ratio" as a possible calculation basis for the rule of formation/release of CCB (Drehmann et al., 2010; 2011) we offer an

integrated approach to its formalization (Vasilyeva, Leonov & Lunyakov, 2013; Lunyakov, 2013), that is different in:

- the main types of financial imbalances (imbalances of the financial sector) of the cyclical development of the financial sector of Ukrainian economy: credit (spread between the offered credits value and real GDP change), liquidity (spread between the offered credits value and the volume of attracted funds), monetary (spread between the offered credits value and the volume of attracted funds in foreign currency), leverage (spread between the offered credits value and the level of nominal income of population);
- application of a separate integrated indicator of the imbalances in the financial sector. Its calculation is based on the revealed types of imbalances. It will allow increasing complexity and decreasing procyclicality;
- record keeping of the changes in the phases of cyclical development of financial relations in the national economy.

Table 1. Principles of formation/release of the countercyclical capital buffer, authors' development

Principles	Essence of the principles
Goal	The CCB formation by the institutes of the financial sector must be performed when the basis for further credit growth becomes a speculative component. The CCB acts as an efficient instrument on the side of regulators in smoothing credit decline and decreasing economic losses under financial stress.
Application of a wide range of signaling indicators	Calculation basis for the formulation of the rules of formation/release of the CCB must be those indicators (indices) of the development of the financial sector that have high predictive properties as for possible negative consequences of financial disproportions accumulation.
Complexity of reason analysis of procyclicality of the financial sector of economy	Reasons for the decision to form/release the CCB require getting arranged (validated) conclusions according to the results of the analysis of alternative/complementary indicators of financial stresses.
Adequacy of the period of the CCB release to expectations of economic agents	The CCB release must correspond to the real dynamics of the situation at financial markets: -If credit volume slows gradually and real threat to system-wide crisis is absent, the CCB must be released to make the economy feel least of the credit decline, while banking system fulfilled all necessary requirements to the standards of capital sufficiency; -In other cases it is reasonable to release the CCB quicker.
Complementarity of the CCB formation as a macroprudential instrument	The CCB is an additional element of general protection of the banking system from possible economic losses. At the same time it is reasonable to apply other instruments during the macroprudential supervision (credit limits («LTV-ratio»), profit leverage limits (before-tax profit value to interest payments under loans ratio); industry-based capital buffers connected with credit expansion of certain economic sectors etc.).

The rule of formation/release of the CCB is given in the analytical form:

$$\left\{ \begin{array}{l} b_t = b(\Delta IIFS I_{t_{sm}}) = \begin{cases} 0, & \text{if } \Delta IIFS I_{t_{sm}} < L \\ \frac{\Delta IIFS I_{t_{sm}} - L}{H - L} \times 2,5 & \text{if } L \leq \Delta IIFS I_{t_{sm}} \leq H \\ 2,5 & \text{if } H < \Delta IIFS I_{t_{sm}} \end{cases}, \\ L = Q_1 [\Delta IIFS I_{t_{sm}}] \\ H = Q_3 [\Delta IIFS I_{t_{sm}}] \end{array} \right. \quad (1)$$

where t – time factor; bt – the size of CCB of the financial sector (in interest units from risk-weighted assets employed in the process of transformation of accumulated financial resources into the borrowed and investment capital); $\Delta IIFS_t$ – increment of integrated indicator of imbalances of the financial sector (smoothed on the annualized basis); Q_1 – the first quartile; L – the minimal limit of the change range of the integrated indicator of imbalances in the financial sector (necessity of CCB forming is absent; it is defined a posteriori), it corresponds to the first quartile; Q_3 – the third quartile; H – the maximal limit of change range of the integrated indicator of imbalances in the financial sector (CCB is formed in full; defined a posteriori); it corresponds to the third quartile.

It is offered to calculate the integrated indicator of imbalances in the financial sector ($IIFS$) using the principal components method as a linear combination of the revealed types of financial imbalances for Ukrainian economy:

$$IIFS = -0,22Z_{K_C} - 0,23Z_{K_L} - 0,21Z_{K_{LD}} - 0,19Z_{K_{CU}} - 0,22Z_{K_{DB}}, \quad (2)$$

where $Z_{K_C}, Z_{K_L}, Z_{K_{LD}}, Z_{K_{CU}}, Z_{K_{DB}}$ are the standardized values of indicators of imbalances in the financial sector of Ukrainian economy: credit imbalance (K_C), strategic liquidity imbalance (K_L), long-term liquidity imbalance (K_{LD}), currency imbalance (K_{CU}), debt burden imbalance (K_{DB}).

Weighing coefficients are received based on the results of generalization of statistic information on the development of the financial sector of Ukrainian economy in 2001–2012.

The results of the research revealed that active formation of CCB in the financial sector of Ukrainian economy must be realized when the sector is close to the boundary of financial unsoundness (2006–2008), and its release is on the stage of financial unsoundness (2009–2010), that would allow amortizing the credit crunch in the national economy (Figure 1).

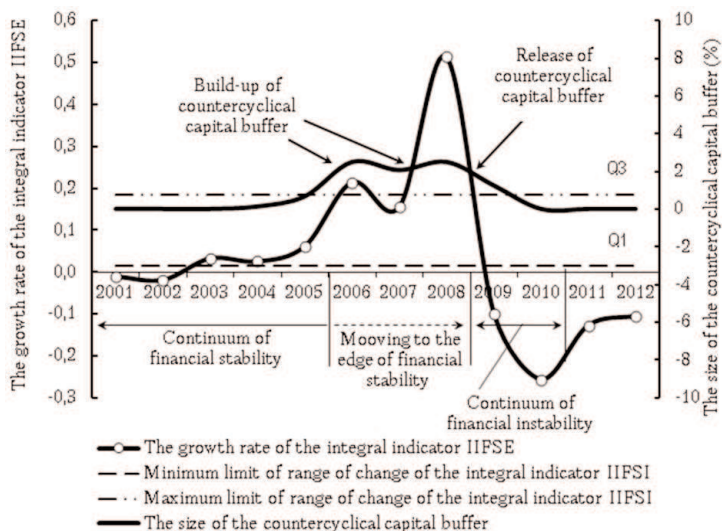


Figure 1. Dynamics of formation and release of the countercyclical capital buffer in Ukraine, 2001–2012, authors' development

Conclusions. Formalized macroprudential rule of formation/release of CCB could be used as the basis for reforming the existing system of regulation of the financial sector of Ukrainian economy. It is estimated that it will increase the level of satisfying money-and-credit needs of subjects of social redistributive relations in terms of cyclical development of the financial sector of economy. In general, analyzing the reform package Basel III, it should be noted that its realization requires record-keeping of stages of the development of the financial sector of Ukrainian economy (Mischenko & Neznamova, 2011; Petrik, 2013), as the process of bank capital accumulation up to the size required by the reform package Basel III may become a deterrent in crediting the real sector of economy on the phase of weak or instable growth.

Besides, CCB formation does not guarantee the complete coverage of economic losses of the financial sector of economy during financial stresses. Despite the positive sides of demand related to the increase in capital sufficiency in the banking sector, in our opinion, monetary instruments of the National Bank of Ukraine and prudent fiscal policy of the country will play an important role in regulation of future imbalances.

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