Risk-oriented banking supervision: approaches to the assessment of general systemic risks

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1. Introduction

The globalization of the economy and banking activity, which accelerated considerably at the end of the XX – beginning of the XXI centuries, is the characteristic feature of the contemporary economic relations. The international experience confirms the fact that the interrelation of the cyclic dynamics of a national economy, monetary politics and global financial markets can contribute to the effect of destabilization.

The necessity to avoid the destabilization of the banking system's security is not always adequately considered by the supervisory practices. Historic miscalculations and inadequacies in applying the regulatory measures led to the creation of the international authority of banking supervision, the main objective of which is the exchange of experience in supervision and preparation of appropriate recommendations.

In the last decade the role of the International Accounting Standards Board (IASB) grew in importance as it develops and issues standards, which are the basis of financial reports of many banks. Today, the basic methodology of the banking supervision is developed by the Basel Committee on Banking Supervision at the Bank for International Settlements within the framework of standards, recommendations and publications on effective banking supervision. Later, these approaches are used and elaborated by central banks.

The last change introduced by the Basel Committee into the Basic principles of banking supervision is their focusing on the assessment and management of banking risks. As we see, banks are at the center of attention of the banking supervision in accordance with the recommendations of the Basel II. However, in our opinion, for the smooth functioning of the economic system more profound problems have to be solved, with the possibilities of banks' bankruptcies and general systemic risks to be addressed.

The goal of the article is the development of a conception for the assessment of general economic risks of the banking system as part of a risk-focused banking supervision.

2. Literature review

Researchers have long been engaged in the development of an ideal set of indicators which could help precisely identify the state of the banking system's financial stability. Probably, the first efforts in this area were made by the Federal Reserve System of the United States after the Great Depression of 1929-1939.

However, the activity of the Federal Reserve System is focused mainly on the development of institutional mechanisms for the protection of financial markets and their participants. One such innovation of the Federal Reserve System is a legislatively introduced division between the investment and credit activity of credit institutions (Glass-Steagall Act), as well as the establishment of the Federal Deposit Insurance Corporation in the United States.

All types of economic activities are potentially connected with risks. Risk is an integral part of industrial relationships and economic mechanisms. In the broad sense, risk is understood as a possibility for the emergence of a negative occurrence, phenomenon or coincidence of such circumstances.
Risk-focused supervision is a comparatively new concept for bank supervisory authorities; it stipulates the introduction into the supervisory practices of accounting analysis, early warning systems and assessment of the banking system stability in order to define high risk areas.

The researchers of Harvard University indicate that the "three aspects of the risk-focused supervision" are mutually interconnected:

- understanding the environment in which a bank and banking system are operating;
- understanding the risk profile of every institution;
- understanding the risk profile of products, services and general activity of banking institutions.

It is also important for the regulators to understand the economic and political environment, in which banking institutions are operating.

The research of indicators pointing to the possibilities and timing for the emergence of banking crises has been carried out by the leading economists for several decades. These indicators can be divided into four groups (generations).

Models of the first generation (for example, Miskhin, 1978) were based on the investigations of the consequences of the Great Depression in the USA. They are based on the premise that microeconomic situation has an influence on the behavior of debtors and creditors of a bank, which leads to the closing of financial institutions. For example, by using the facts of the Chicago banking panic, Calomiris and Mason (1997) analyze the frequency of the contagious effect on other institutions, which is the result of the deposits outflow. They have proved that such chain effects can cause bankruptcies or disruption of the whole system.

Models of the second generation are focused on the behavior of a bank's creditor. They study bank crises as self-appearing processes calling this a "spots on the sun" effect. Diamond and Dybvig (1983) maintain that banking crises are not connected to business cycles. On the contrary, sudden changes in the expectations of creditors can lead to a crisis. In 1988 Gorton refuted the accidental nature of the mass outflow of deposits. By using the long-term US statistics he investigated the systematic connection between the outflow of bank deposits and the downturn in production, which makes creditors reduce their own expectations.

Models of the third generation show the role of the cycles of growth and decline in the economic activity. Gavin and Hausman (1996) dedicated several of their works to the research of this model. Other researchers, such as Hardy and Pazarbaşioğlu (1998), Demirguc-Kunt and Detragiache (1999), the European Central Bank (2005), corroborated these findings. During the period of economic growth banks are inclined to increase credits secured by the real estate or other property, which is expected to gain in value. In this way the credit boom is supported. Unexpected reduction in the price of assets prompts banks to get their credits back. Accordingly, credit panic has an impact on the decline in economic activity. The third generation models use macroeconomic figures as warning indicators. Usually, they are not used for the assessment of the institutional environment in which the financial institutions are operating.

Models of the fourth generation identify the peculiarities of the institutional environment, which are the reason for the rise in macroeconomic imbalances and leading to banking problems. These models pay attention to the protection of share holders, creditors' rights, legal norms, professionalism of the regulatory and supervisory policies, mechanisms for protection of deposits and social environment. A system for the early warning of banking crises, which takes into account institutional environment, was developed by Demirguc-Kunt and Detragiache (1998). Hutchinson and McDill (1999), Eichengreen and Arteta (2000), and Hutchinson (2002) have increased the number of institutional variables in their works. Beck, Demirguc-Kunt, and Levine (2005) study the concentration of the banking industry in their research of banking crises, while Barth, Caprio, and Levine (2004) focus on the banking regulation and supervision. Factors, which can be used for the forecasting of certain developments in the banking system, are not uniform for all economies. Demirguc-Kunt and Detragiache (2005), Barth, Caprio, and Levine (2004) have given a statistical substantiation of the fact that a strong regulatory foundation supports financial stability. Recent investigations of Das, Quintyn, and Chenard (2005) have come up with a certain confirmation that countries with high quality of financial sector policies better sustain macroeconomic pressures in times of crises.

Recent investigations of Gropp and others (2004) offer market-oriented indicators, such as spreads of subordinated debt obligations as early warning indicators for banking problems on a micro-level. Fox (2005) offered the matrix for risk systematization, which illustrates the relation between the indicators of the banking system based on Fitch average ratings and a set of macro-prudential indicators, which defines the deviations of unstable asset prices from the general trend and credit activity.

The research of the evolution of the banking crises econometric models of the third and the fourth generations confirms the hypothesis that the study of the possibilities of crises on the level of banking systems should be considered in the context of macroeconomic trends.

Such models have a great importance for the agents of banking supervision. However, no clear common agreement on the set of indicators to be used for the warning of banking problems has been achieved in literature.

3. Presentation of the main material

In our view, a deliberate deviation from the above-mentioned positions would be the wrong approach.

We believe, however, that the main objective of the risk-focused supervision is the use of methods and instruments, which help achieve supervisory goals effectively in the shortest possible time and at a low expense.

Regarding the approaches to the analysis of banks and banking system, risk-oriented supervision is not just a separate approach, but a principally new conception. Risk-oriented supervision has the following requirements to the analysis:

- focus on the real risks of banks;
- assessment of systemic stability of the banking system;
- early warning and problems identification at separate banks and in the banking system generally.

Therefore, risk-oriented supervision is a system of a constant monitoring and control over:

1) general systemic risks in the banking activity;
2) risks that appear as a result of inopportune, ill-timed actions or inactivity of central banks;
3) risks caused by the activity of banks of the second level aimed at identifying high risk zones in the banking system and assessment of the efficiency of the previously accomplished anti-crisis measures.

This approach is based on the necessity to consider the synergy effect, foresight of possible threats for the whole system. Such risks can appear as a consequence of changes in the type of relationships of certain elements in the banking system, loss of ties between them and reactions by the system's elements of a higher order.

Within the conception of risk-oriented banking supervision *general systemic risks of the banking activity* are defined as possible disruptions in the functional interaction of the banking system's components, which can lead to its destabilization and even collapse. The consequences of the appearance of risks in this case are manifested not on the level of separate banks, but in the whole banking system: its stableness is reduced; the interaction between some of its sections disrupted; the proportions in the functioning of some of its elements changed causing serious imbalances; the quality of internal systemic informational and financial flows is diminished.

All risks that provoke general systemic risks can be divided into several groups according to the strength and area of their impact with the definition factors, which cause their appearance.

Group classification of general systemic risks, the list of risks within each group as well as risk factors, are presented in Table 1 a-b.

The medium-term and long-term systemic risks potentially increase the load on the financial sector. Therefore, their sources should be defined and assessed.

The assessment of general systemic risks should be focused on the preventive function, which determines the measures aimed at warning unforeseen negative consequences, and controlling function that should ensure uninterrupted supervision over the processes taking place in the banking system.

Group of risks	Type of risks	Risk factors
Political	Risks connected with involvement of the banking system in election campaigns, fulfillment of pre-election obligations of certain political parties; risk of changes in the banking priorities resulting from changing political situation and ruling groups in a country; risk of asymmetric information within the banking system as a result political uncertainty, etc.	The major factors for the appearance of risks connected with the changing priorities in the banking activity as a result of shifting political influence are the following: changes of political system, changes in the legislative and executive power, changes in the general strategy of the economy's regulation, changes of foreign economic strategy, etc.
Financial	Risk of insufficient long-term credit resources; risk of changing priorities in the development of banks' financial innovations; risk of credit booms on the background of rising inflation, etc.	The major factors for the risk of insufficient long-term credit resources are: rising inflation; diminishing trust to the national banking system, which makes it impossible for banks to borrow long-term resources on the world financial markets; growth of the country's foreign debt; balance of payments deficit; declining competitiveness of domestic exports on world commodity markets, etc.

Table 1a: Classification of general systemic risks in banking

Group of risks	Type of risks	Risk factors
Legal	Risk of frequent changes in the regulatory basis, which regulates the activity of a banking system; risk of decisions made by legislative and regulatory authorities, which considerably change the conditions of banks' operations without providing sufficient time to adapt to these new conditions, etc.	The major factors for the risk of frequent changes in the regulatory basis are: instability of political situation in a country; changing priorities in economic policies; imperfection of the national legal system, etc.
Situational	Risk of technological changes, changes in forms and parameters of banking accountability; risk of the banking system's retreating into the "shadow economy"; risk of using the banking system for money laundering; risk of a diminishing trust to the banking system on the part of residents and nonresidents, etc.	The major factors for the risk of the banking system's retreating into the "shadow" are: underdevelopment of financial market's infrastructure; increasing "dollarization" of the economy; decline in the transparency of banking accountability; reduction of requirements to identification of creditors' financial environment, etc.

Table 1b: Classification of general systemic risks in banking

The banking system is integrated into the national economic system. In the functioning of these systems we can clearly trace the realization of the coherence principle. Specific features of the banking system appear in the process of cooperation of its subsystems (banks).

Proceeding from such positions we can maintain that banking system is an element of systems of a higher order – economic, financial and others, and which, as part of these systems, performs a whole range of specific functions being interconnected with other components of the above-mentioned systems with the defined level of hierarchical interdependencies.

Therefore, it would be expedient to combine the two approaches in the study of a banking system: micro-level – banking system and its functioning as a closed system and macro-level – macroeconomic indicators.

Such approach could be used to build a system for the assessment of general systemic risks and their potential impact on the banking system. In our opinion, it is important for banks themselves, as participants of the system, to be able to assess the defined parameters.

During the reformation of the banking supervision system in Ukraine the assessment of systemic risks should be carried out in the following way:

$$R_i^s = \sum_{j=1}^{J} F_j^{s,i} \cdot P(F_j^{s,i}) \pm \Delta R_i^s(S) \pm \Delta R_i^s(NBU) \pm \Delta R_i^s(B_{II}), \qquad (1)$$

where R_i^s is the quantitative cumulative estimate of the *i*-type of the banking activity's systemic risk; $F_j^{s,i}$ is the quantitative estimate of the *j*-factor, which conditions the appearance of the *i*-type of the banking activity's systemic risk; *J* is a general number of factors, which condition the appearance of the *i*-type of the banking activity's systemic risk; $P(F_j^{s,i})$ is a probability for the appearance of the *j*-factor, which conditions the appearance of the *i*-type of the banking activity's systemic risk;

$\Delta R_i^s(S)$, $\Delta R_i^s(NBU)$, $\Delta R_i^s(B_{II})$ are correspondingly the aggregates of the quantitative estimate of the *i*-type of the banking activity's systemic risk as a result of the cumulative effect of other types of systemic risks, which are formed by the National Bank of Ukraine and risks formed by banks of the second level.

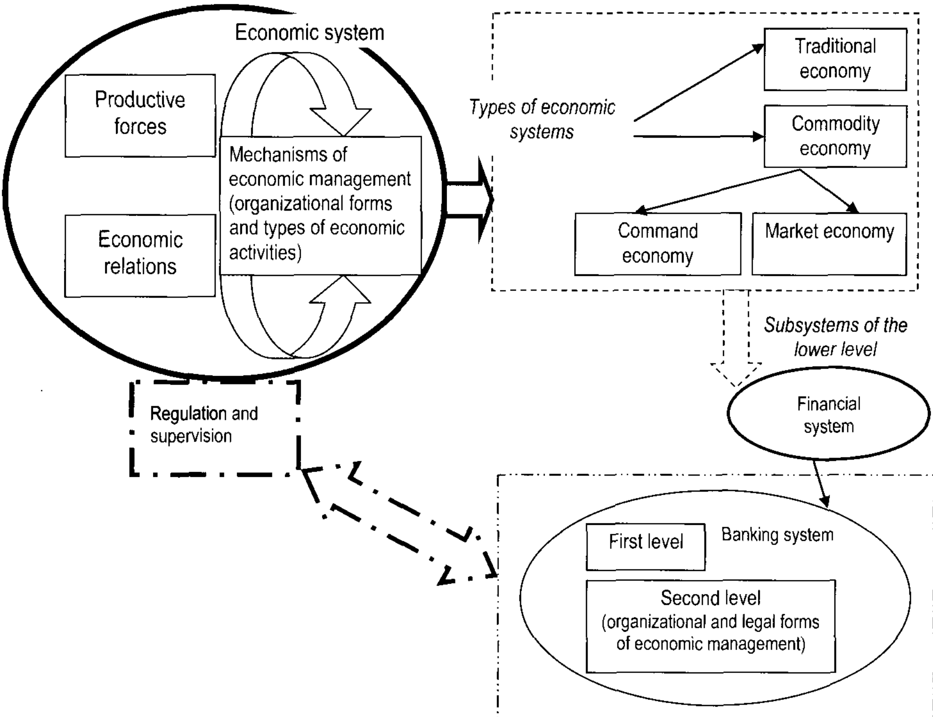

Fig. 1 Relationship between the banking system and the country's economic system.

The approach described above has the following logic. In the authors' opinion, the use of the systemic approach in the supervision of the banking risks is important not only for a separate analysis of each individual type of risk, but also for the combined risk level in the whole system as a result of the cumulative effect (synergy effect and chain reaction effect). The appearance of a risk in one element of the banking system due to its causal relationship with its other elements gives rise to other types of risks, which increases or decreases the negative consequences of the type of risk under investigation leading to the changes in the combined risk level for the system in general. In other words, the manifestation of only one systemic risk would most likely provoke the appearance of a whole range of other risks. If several risks emerge simultaneously, the combined negative consequences from the systemic risk under investigation can either grow or diminish as a result of a mutual leveling of some of their effects.

The qualitative estimation for the probable appearance of every type of risks is carried out in the following way: in relation to the risks, which are systemic and have already previously occurred – on the basis of the statistical analysis (assessment of an objective probability); in relation to the risks, which are characterized by the lack of statistical series – by using an expert judgment (assessment of subjective probabilities). A reliable qualitative assessment of general systemic risks of the banking system is an extremely complex problem in the competence of a system analysis.

4. Conclusions and recommendations

The research of the risk-oriented supervision has made it possible to make the following conclusions and practical recommendations:

1. The main principles of the banking supervision developed by the Basel Committee on Banking Supervision are in the form of recommendations. Considering the observations and approaches to the supervision set forth in these recommendations, each country should take into account its national peculiarities and conditions of its own banking system.

2. Risk-oriented supervision should be understood as a system of a constant monitoring and control over:

(1) general systemic risks in the banking activity;
(2) risks that appear as a result of inopportune, ill-timed actions or inactivity of central banks;
(3) risks caused by the activity of banks of the second level aimed at identifying high risk zones in the banking system and assessment of the efficiency of the previously accomplished anti-crisis measures.

3. Within the conception of risk-oriented banking supervision general systemic risks of the banking activity are defined as possible disruptions in the functional interaction of the banking system's components, which can lead to its

destabilization and even collapse. The consequences of the appearance of risks in this case are manifested not on the level of separate banks, but in the whole banking system: its stableness is reduced; the interaction between some of its sections disrupted; the proportions in the functioning of some of its elements changed causing serious imbalances; the quality of internal systemic informational and financial flows is diminished.

4. The use of the systemic approach in the supervision of the banking risks is important not only for a separate analysis of each individual type of risk, but also for the combined risk level in the whole system as a result of the cumulative effect (synergy effect and chain reaction effect). The appearance of a risk in one element of the banking system due to its causal relationship with its other elements gives rise to other types of risks, which increases or decreases the negative consequences of the type of risk under investigation leading to the changes in the combined risk level for the system in general.

5. Further research should be focused on the methodical approaches in the assessment of risks, which occur as a result of ill-timed actions or inactivity of central banks and risks caused by the activity of banks of the banking system's second level.

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