

## FINANCES AND ECONOMIC ANALYSIS

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### IDENTIFICATION OF SIGNIFICANT RISKS OF THE BANK AS AN IMPORTANT PREREQUISITE FOR ENSURING ITS FINANCIAL STABILITY: APPLIED ASPECT

The article examines the economic nature of the concept of "significant risk", which is proposed to be interpreted as a banking risk, which in its quantitative and qualitative parameters is characterized by a non-zero level of materiality, and its realization is guaranteed to reduce capital adequacy. The classification of the types of significant bank's risks has been improved. Regulatory, quantitative and qualitative methods of significant risks identification are considered. It is substantiated that this process should be based on the use of a differentiated approach, namely: identification of the significance of the bank's risks in terms of business lines and certain types of financial products, as well as provide a comprehensive approach to identifying significant risks and assessing their materiality. The relationship between the significant risks of the bank and its financial stability is illustrated by a logical-process scheme.

**Keywords:** bank, significant risk, attributes of risk materiality, classification, identification, internal procedures of capital adequacy assessment, risk management.

**Problem statement.** Currently, the scientific community shows full solidarity that one of the most important prerequisites for long-term financial stability of the bank, and therefore, ensuring the continuity of its performance regardless of the macroeconomic environment, is the effectiveness and efficiency of risk management. At the same time, the very rethinking of the determinants of financial stability, which took place in the global dimension under the influence of the global financial crisis of 2007-2008, led to a radical revision of the concept of risk management in the bank. The content of the second pillar of Basel II, which formulates the basic principles and recommendations for the organization of risk management in banks, became the methodological stimulus for this process. Moreover, stimulating the development of risk management is identified as a long-term priority of the banking supervision system<sup>1</sup>. Taking into account these recommendations of the Basel Committee, the European Central Bank has developed a methodological framework for the organization of internal capital adequacy assessment process (ICAAP) to be implemented in banks' risk management systems<sup>2</sup>. Due to these methodological changes and in accordance with the principle 4 of ICAAP, all significant risks of the bank, both accepted and potential, currently are the objects of the risk management system of the bank.

**Analysis of recent research and publications.** The works of many Ukrainian and foreign scholars are devoted to the identification of banking risks. O. Skasko pays attention to identifying areas

<sup>1</sup> Basel Committee on Banking Supervision (2006). *International Convergence of Capital Measurement and Capital Standards: a Revised Framework* <<https://www.bis.org/publ/bcbs128.pdf>> (2020, August, 25).

<sup>2</sup> European Central Bank (2018). *Guide to the internal capital adequacy assessment process (ICAAP)* <[https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.icaap\\_guide\\_201811.en.pdf](https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.icaap_guide_201811.en.pdf)> (2020, August, 25).

for improvement of risk management systems in the Ukrainian banks in accordance with modern requirements of the global financial environment<sup>1</sup>. E. Kniازهva and N. Parusimova<sup>2</sup>, T. Adamowicz<sup>3</sup> consider methodological features of bank's risk management through the prism of Pillar I and Pillar II of Basel agreements. The work of O. Poltinina and I. Aleksieienko<sup>4</sup> is devoted to the generalization of theoretical approaches and the development of analysis and assessment of the bank's financial risks. In terms of the study of the banks' significant risks, it is appropriate to single out the works of N. Shvets<sup>5</sup> and of D. Haselkorn, I. Khaykin, and R. Eaton<sup>6</sup>. In general, appreciating the contribution of scholars to the development of scientific and methodological approaches to the management of the bank's risks, including their identification, in our opinion, applied aspects of the identification of significant risks require further research.

**The purpose of this article** is to clarify the economic meaning of the concept of "significant risk" and to improve the applied aspects of identifying significant risks of the bank.

**Results and discussion.** To ensure the financial stability of the bank, it is important to organize preventive management of the most significant risks of the bank, which in turn requires the development of scientific and methodological approaches to their identification. The correctness of the latter directly depends on those semantic features that underlie the economic meaning of the concept of "significant bank's risk".

It should be noted that the analysis of the scientific literature on the improvement of the risk management system within the framework of the ICAAP concept revealed the absence, with some exceptions, of scientific approaches to the interpretation of the concept of "significant risk". In particular, R. Pashkov and Y. Yudenkov attribute the main bank's risks, namely: credit, market, interest rate, operational, liquidity risk and concentration risk in terms of credit risk to the significant risks of the bank<sup>7</sup>.

Supranational and national regulators also propose different interpretations of this term. The European Central Bank in the already mentioned document laid down the fundamental requirements for the management of material risks of the bank, along with the fact that the bank must "use its own internal definition of materiality"<sup>8</sup>. A similar approach is proposed by the National Bank of Ukraine, which states that "the bank independently determines the factors, indicators and threshold of materiality... of risks based on sound conclusions and determines the procedure for identifying such risks in the methodology for identifying significant risks"<sup>9</sup>. In addition, the national regulator provides a list of those risks that must be identified by the bank as significant, namely: credit risk, liquidity risk, interest rate risk of the banking book, market, operational and compliance risk.

In turn, the National Bank of Poland identifies the risks of the "mandatory" bloc: credit risk; counterparty risk; residual credit risk; risk of concentration; risk arising from securitization; risk caused by changes in macroeconomic conditions; market risk; interest rate risk of the banking book;

<sup>1</sup> Скаско, О. І. (2014). Удосконалення системи управління ризиками в банках України. *Бізнес Інформ*, 1, 274-279.

<sup>2</sup> Князева, Е. Г., Парусимова, Н. И. (2015). К вопросу о методах управления банковскими рисками в контексте Базельских соглашений. *Фундаментальные исследования*, 3, 173-180.

<sup>3</sup> Adamowicz, T. (2018). Types of risk in banking operations – categorization and definitions. *Economic and Regional Studies*, 11(4), 37-56. DOI: <https://doi.org/10.2478/ers-2018-0034>.

<sup>4</sup> Полтніна, О. П., Алексеєнко, І. І. (2016). Технологія оцінки та аналізу фінансових ризиків діяльності банку. *Економіка та суспільство*, 3, 470-476. <<http://economyandsociety.in.ua/journal-3/10-articles-3/250-poltinina-o-p-alekseenko-i-i>> (2020, August, 14).

<sup>5</sup> Швець, Н. Р., Юшкалюк, А. А. (2017). Ідентифікація значущих ризиків банківської установи. *Науковий огляд*, 3 (35), 1-20.

<sup>6</sup> Haselkorn, D., Khaykin, I. and Eaton, R. (2015). Risk identification. What have banks been missing? *Oliver Wyman*. <[https://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2015/may/Oliver\\_Wyman\\_Risk\\_Identification.pdf](https://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2015/may/Oliver_Wyman_Risk_Identification.pdf)> (2020, August, 20).

<sup>7</sup> Пашков, Р. В., Юденков, Ю. Н. (2017). *Внутренние процедуры оценки достаточности капитала (ВПОДК) банка*. Москва: РУСАЙНС.

<sup>8</sup> European Central Bank (2018). *Guide to the internal capital adequacy assessment process (ICAAP)* <[https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.icaap\\_guide\\_201811.en.pdf](https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.icaap_guide_201811.en.pdf)> (2020, August, 25).

<sup>9</sup> Національний банк України (2018). *Положення про організацію системи управління ризиками в банках України та банківських групах* <<https://zakon.rada.gov.ua/laws/show/v0064500-18#Text>> (2020, August, 28).

operational risk<sup>1</sup>. The National Bank of Poland also emphasizes the need to manage other significant risks of the bank, which are not included in the above list (note that the Polish regulator uses the term “istotny”). Like the European practice, the National Bank does not define the concept of significant risk, however, in Article 15.1 of the cited resolution notes that when choosing methods (models) to identify and measure significant risks their profile, scale and complexity must be taken into account. In our opinion, this indicates the multifaceted nature of the bank’s significant risks.

However, significant bank’s risk is not a separate type of the bank’s risks. Hypothetically, each risk of banking under certain internal and external conditions can be characterized by a high level of materiality, and therefore can be classified as significant one. In this case, in our opinion, the object that is affected when realizing such a risk is the fundamental semantic feature of the concept of “significant bank’s risk”. We believe that the adequacy of the capital is such an object for a significant risk of the bank, which in quantitative terms is reflected in the negative change of adequacy’s indicators and causes the bank’s need to increase the capital amount. Summarizing all the above, the significant risk of the bank is the risk of the banking institution, which in its quantitative and qualitative parameters is characterized by a non-zero level of materiality, and its implementation is guaranteed to reduce capital adequacy. The authors’ view on the classification of significant risks of the bank is given in Table 1.

Table 1

### Classification of significant bank’s risks

Classification criteria	Types of risks
By the economic nature	Financial, non-financial
By the life cycle	Potential; those that are controlled; those that are realized
By the agent of identification	Those defined by the regulator; those defined by the internal bank’s risk management department
By the ability to be managed	Those that can be managed; those that are accepted; those that are not controlled (either because of their specific nature or because of their non-identification)
According to the identification criteria	Those that are detected on the basis of quantitative parameters; those that are detected on the basis of qualitative parameters
By the degree of materiality	The most significant; essential
According to the evaluation method	Those that are evaluated by quantitative methods; those that are evaluated by qualitative methods

*Source. Compiled by the authors.*

In terms of scientific and methodological approaches to the identification of significant risks of the bank, it is appropriate to distinguish the following three groups: regulatory, quantitative and qualitative. Thus, according to the regulatory approach, the list of those risks that must be identified by the bank as significant ones is determined by the regulator. In this regard, national regulators rely on the following:

1) the level of risk management culture. As a result, the higher is its level, the more democratic is the relationship between the regulator and banks, and there is a greater opportunity for banking institutions to apply their own methodology, including determining the list of significant risks. In our opinion, this is directly related to the level of the banks’ awareness of the need to operate taking into account socially significant priorities. This, in turn, requires the progressive development of self-awareness of the banking community to the desire not only to formally adhere to established norms, but also to implement socially significant functions;

2) Basel recommendations on the methodology of capital adequacy assessment. National regulators may rely on both Pillar II and Pillar III of Basel II to draw up the list of risks that must be identified as significant by the banks. Then, in the first case, we are talking about credit, market and operational risks, i.e. those that are taken into account when calculating the regulatory capital adequacy ratio;

<sup>1</sup> Komisji Nadzoru Bankowego (2007). *W sprawie szczególnych zasad funkcjonowania systemu zarządzania ryzykiem i systemu kontroli wewnętrznej oraz szczególnych warunków szacowania przez banki kapitału wewnętrznego i dokonywania przeglądów procesu szacowania i utrzymywania kapitału wewnętrznego* <[https://www.knf.gov.pl/knf/pl/komponenty/img/u4\\_2007\\_8533.pdf](https://www.knf.gov.pl/knf/pl/komponenty/img/u4_2007_8533.pdf)> (2020, August, 20).

and in the second case, they are also the risk of concentration within the credit risk, reputation risk, interest rate risk and strategic risk.

Thus, in accordance with the regulatory approach, it is assumed that a certain list of risks is unconditionally significant for all banks, which is debatable. For example, credit risk in general is undoubtedly a significant banking risk, and its unjustified accumulation can undermine the financial stability not only of the banking sector but also the financial sector as a whole, as evidenced by the 2007 mortgage crisis. However, in our opinion, it is appropriate to consider the hypothesis that credit risk does not always have to relate to the most significant risks of each bank.

In order to prove the formulated hypothesis, the materiality of credit risk in the context of the Ukrainian banks was assessed. It was revealed that the share of credit debt at risk according to the NBU methodology in the total amount of credit debt ( $K_{risk}$ ) for 74% of existing banks is twice less than for the banking sector as a whole (Table 2). At the same time, as of August 01, 2020, this rate exceeds the average only for eight banks, and twenty-nine banks are characterized by at least twice lower rate than the average for the banking sector (as of August 01, 2020 it is less than 10%). In this context, the question arises as to whether these twenty-nine banks should identify credit risk as significant one?

The answer to this question requires a more detailed analysis of the additional characteristics of the credit risk of these banks, namely: 1) consideration of this issue in terms of business lines (corporate and retail lending); 2) taking into account the gradation of credit risk depending on the credit class of debtors (Table 3). This revealed the following:

- despite the fact that this sample of banks is characterized by a relatively low  $K_{risk}$ , it was found that the amount of their credit risk by 57% had been formed due to NPL. At the same time, the share of credit risk caused by NPL ( $K_{risk}^{NPL}$ ) for retail lending is 15%, and for corporate lending is 42%;
- for ten banks of the sample  $K_{risk}^{NPL}$  is more than 15% in retail lending and for eight banks it is more than 42% in corporate lending. At the same time, two banks (JSC Raiffeisen Bank Aval and JSC Poltava Bank) are characterized by exceeding these indicators on both business lines;
- among the formed sample the amount of credit risk caused by NPL is equal to zero both on retail and corporate lending only in four banks. They are JSC Deutsche Bank DBU, JSC SEB Corporate Bank, JSC Bank Avangard and JSC CB “Land Capital”. At the same time, as of December 31, 2019, the share of the clients’ loan portfolio in the assets of JSC Bank Avangard is 10% against 78% of the securities portfolio formed by NBU deposit certificates and government bonds.

Table 2

### Quantitative attributes of credit risk materiality for the banks of Ukraine

Indicators	As of		
	01.01.2019	01.01.2020	01.08.2020
1. Number of operating banks	78	75	75
1.1. among them, number of banks providing loans	76	73	73
2. The share of credit debt at risk in the total credit debt of the banking sector (hereinafter – K1), %	50	49	50
3. The average rate of the share of credit debt at risk in the total credit debt (hereinafter – K2), %	17	19	20
4. Number of banks for which $K_{risk}$ is higher than K1	10	6	8
4.1. among them, systemically important banks	4	3	3
5. Number of banks for which $K_{risk}$ is twice less than K1	56	54	56
6. Number of banks for which $K_{risk}$ is twice less than K2	29	31	29
6.1. among them, systemically important banks	1	3	2

*Note.* When calculating the indicators in lines 3, 5 and 6, only banks engaged in lending activities were taken into account.

*Source.* Calculated by the authors on the base of the Supervisory Data of the National Bank of Ukraine<sup>1</sup>.

<sup>1</sup> Національний банк України (2020). *Наглядова статистика* <<https://bank.gov.ua/ua/statistic/supervision-statist/data-supervision#3>> (2020, September, 07).

Table 3

**The results of in-depth diagnosis of the degree of credit risk materiality  
for the sample of banks under analysis**

Indicators	Bank's business line	
	Retail lending	Corporate lending
1. Number of banks included in the sample	29	
1.1. among them, number of banks developing the respective business line	26	29
2. The share of credit risk caused by NPL in the total credit risk of the bank ( $K_{risk}^{NPL}$ ):		
2.1. overall level in the sample of banks, %	15	42
2.2. average level within the sample of banks (hereinafter K1), %	15	27
3. Number of banks for which $K_{risk}^{NPL} \leq 5\%$	8	11
3.1. among them, the number of banks in which the condition (3) is met for both business lines	4	
4. Number of banks for which $K_{risk}^{NPL} > K1$	10	8
4.2. among them, the number of banks in which the condition (4) is met for both business lines	2	

*Note. Calculations were made as of August 01, 2020.*

*Source. Calculated by the authors on the base of the Supervisory Data of the National Bank of Ukraine<sup>1</sup>.*

Therefore, in our opinion, JSC Bank Avangard currently belongs to those banks for which the credit risk is not significant. As for JSC CB "Land Capital", the share of its loan portfolio in assets is 75%. At the same time, the bank specializes in corporate lending (as of December 31, 2019, the share of such loans is 99.9%) while maintaining high quality loans as  $K_{risk}$  is only 0.3%. In this case, we cannot say that credit risk is not a significant risk of the bank due to the importance of this sphere of its activity. An assessment of the significance of credit risk from the standpoint of the impact on financial stability should include analysis of the industry structure of corporate loan portfolio.

In general, the empirical study confirmed the hypothesis, as well as the importance of using, firstly, a differentiated approach, namely the identification of the materiality of risk in terms of business lines and even certain types of financial products. And secondly, the necessity of the application of an integrated approach to the formation of criteria for identifying significant risks and assessing the degree of their materiality was proved. In this context, the approach of R. Pashkov and Y. Yudenkov deserves attention. They propose to use the following indicators as the main criteria of materiality of risks: the amount of transactions exposed to risk (exposure); frequency of risk events (frequency); materiality of losses from potential risk (severity)<sup>2</sup>. In our opinion, it is also appropriate to complete these indicators with such criteria as the quickness of risk compensation (velocity) and other corrective indicators, such as the level of novelty or renewal of certain operations of the bank. The meaning of these indicators is given in Table 4.

It should be noted that in order to comply with the principle of complexity, the results of quantitative diagnosis of the materiality of the bank's risks should also be supplemented with qualitative characteristics. In this context, it is appropriate to use the expert method by interviewing the head managers of business lines in the following areas: the complexity of transactions with certain financial instruments; the level of novelty of certain financial products / services and the associated uncertainty about their profitability and / or their inherent risks.

**Conclusions.** To sum up, risk identification is the basis of risk management in banks. However, updating and revising the concept of financial stability after the crisis of 2007-2008 was the impetus for

<sup>1</sup> Національний банк України (2020). *Наглядова статистика* <<https://bank.gov.ua/ua/statistic/supervision-statist/data-supervision#3>> (2020, September, 07).

<sup>2</sup> Пашков, Р. В., Юденков, Ю. Н. (2017). *Внутренние процедуры оценки достаточности капитала (ВПОДК) банка*. Москва: РУСАЙНС.

justifying a new paradigm of banks’ risk and capital management. In recent years, the analytical complexity of risk assessment has increased significantly, including through the use of mathematical modeling tools. But it is our firm belief that the qualitative identification of significant risks, including the ranking of their materiality, largely is the basis of effective risk management. It is appropriate to indicate the areas whose effectiveness directly depends on the quality of identification of the bank’s significant risks:

Table 4

**Structural components of the process of identifying the materiality of credit risk of the bank (the example of lending to construction companies)**

<b>1. Risk selection</b>		
<b>1<sup>st</sup> level risk</b>	<b>2<sup>nd</sup> level risk</b>	<b>Risk meaning</b>
<b>Credit</b>	Concentration risk – construction sphere	Risk of bankruptcy of a significant number of developers due to the economic recession (for example, caused by the COVID-19 pandemic)
<b>2. Description of driving risk factors</b>		
Factors of direct influence: rising prices for construction materials; reduction of effective demand for construction products		
Factors of indirect influence: reduction of production of construction materials in foreign markets; lack of economic drivers for the development of domestic production of building materials		
<b>3. Risk materiality metrics</b>		
<b>Materiality criterion</b>	<b>Indicators and quantitative parameters of risk materiality</b>	
Bank’s risk exposure (exposure)	Share of loans to construction companies in the bank’s corporate loan portfolio (%) If more than 10% – significant	
Realization frequency of a certain risk type (frequency)	Default rate in the respective portfolio for the last 12 months (%) If more than 2% – significant	
Materiality of losses from potential risk (severity)	Share of losses in case of default (calculated on the total credit debt) (%) If more than 20% – significant	
Quickness of compensation the consequences of risk realization (velocity)	The average term of sale of pledged property in case of default If more than 120 days – significant	
Dynamics of changes (dynamics)	Introduction of new credit products or significant change of technology for their provision Making changes in the last 365 days – significant	
<b>4. Scale the degree of risk materiality</b>		
If the risk is identified according to a certain criterion as significant – 2 points. Otherwise – 1 point. Resulting assessment: If the sum of points is from 1 to 5 points – the risk is identified as insignificant; if more than 6 points – the risk is significant.		

Source. Compiled by the authors.

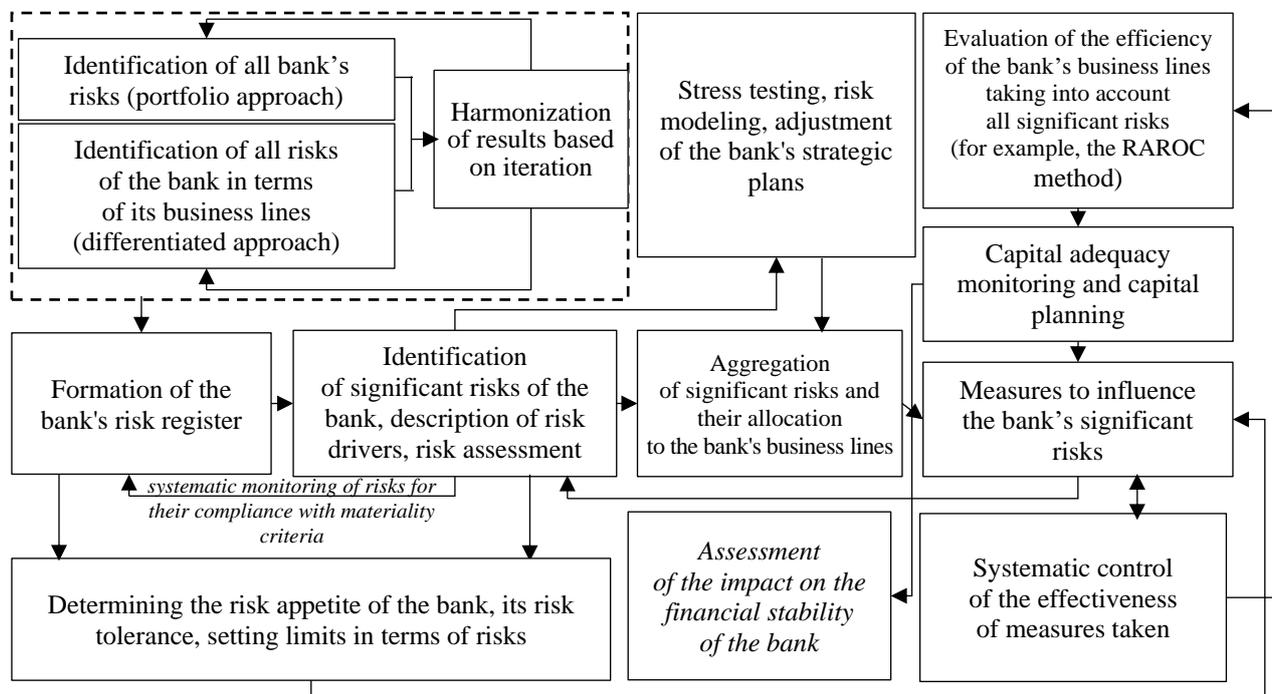
1. Scenario design for stress testing. It is the identification of significant risks that will identify the weaknesses of the bank and correctly make the list of macroeconomic factors that can significantly affect its performance, financial results and financial stability in general. In particular, this is very relevant in terms of concentration risk.

2. Risk modeling and assessment. Firstly, detailed identification of significant risks helps to verify the quality of the models used by the bank. Secondly, the identification of risks that are very difficult to model (for example, reputational or strategic risks) is an applied tool to describe their likely materialization in certain changes in the environment.

3. Organization of risk control. Detailed identification of significant risks ensures an effective allocation of responsibilities for the measurement, reporting and control of these risks between the relevant actors in the risk management system.

4. Implementation of strategic plans. The identification of significant risks and the description of their driving factors enable timely adjustments to the strategic plan and the design of alternative strategies to reduce risk sensitivity or avoid risk, if it is possible and economically feasible.

The authors' vision of the process relationship between the identification and assessment of the significant risks of the bank and its financial stability is presented in Fig. 1.



**Fig. 1. Logic-process scheme of the relationship between the identification of significant risks of the bank and its financial stability**

Source. Compiled by the authors.

It is important to note that the identification of significant risks of the bank should be perceived as a cyclical process that requires a systematic review of the list of significant risks, and the degree of their materiality. The real dynamics of the macroeconomic environment is the reason for this, as well as the emergence of completely new influence factors, which include, in particular, the digitalization of society and financial relations, moreover the possibility of complete freezing of the economy (“Great Lockdown”). Further research will relate to the development of a methodology for allocating significant risks in terms of business lines of the bank, which we consider very relevant from the standpoint of ensuring the stable performance of banking institutions.

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