UDK: 336.71:005
Paper received: October 09, 2023
Paper accepted: October 16, 2023

Journal of Entrepreneurship and Business Resilience
Year VI • Vol 6, No 2.
pp. 30-41

ORIGINAL SCIENTIFIC PAPER

THE FOCAL ROLE OF RISK FUNCTION IN BANKS DURING STRESS TESTING AND EFFECTS ON ORGANIZATIONAL PERFORMANCES

MIRKOVIĆ Vladimir
Economists Association of Belgrade, Belgrade (SERBIA)
E-mails: vladamirkovic@orion.rs

LUKIĆ NIKOLIĆ Jelena
Modern Business School, Belgrade (SERBIA)
E-mails: jelena.lukic@mbs.edu.rs

DUDIĆ Branislav
Faculty of Economics and Engineering Management, Novi Sad (SERBIA)
Comenius University, Faculty of Management, Bratislava, (SLOVAKIA)
E-mails: branislav.dudic@fimek.edu.rs

ABSTRACT

One of the risk management tools that enable a better understanding of the bank's risk profile and its resistance to internal and external shocks is stress testing. Bank-level stress tests should be incorporated into the bank's risk management system and include the views of all relevant bank employees with their expert judgments. Through effective, soundness and transparent stress testing (which became one of the regulatory requirements in the jurisdiction of each central bank), banks preventively take insight into the key values of its business in case of emergence of unpredictable and extraordinary events. Such stress testing considers creation of adequate infrastructure in banks and upon the efficiency level of established stress testing program depend the realization of main organizational objectives. Regular conducting of stress testing in predefined frequency as well as its realization within internal capital adequacy assessment process and recovery plan processes in banks lead to effective risk management. In operational terms, the key role for stress testing depends upon risk function and its organization in the bank. Also, stress testing outcomes could lead to

taking further actions in case of emergency in order to provide continuous and sustainable business on long run.

Keywords: *stress testing, risk management, organization, performances, indicators.*

JEL classification: G28, G32, E58, C80

INTRODUCTION

Stress testing represents one of key instruments for risk management within the bank. Capital requirements, prescribed by the decisions which regulate bank capital adequacy and bank risk management, as well as the supervisory assessment process, demand that banks take a proactive approach in risk management, strategic and capital planning. Among different tools which banks should use to establish such an approach to risk management is stress testing. Global financial crisis in 2008 showed the shortcomings in the current practice of stress testing. In many cases, stress testing was not sufficiently integrated into the bank's risk management system or did not serve as a basis for management's decision-making. In general, where they were used, the scenarios were not rigorous enough, nor were the interdependencies of events adequately captured. In other cases, concentration risk and its feedback effects were not meaningfully included in the stress testing.

Stress testing is more than a simple capital assessment and is one of the risk management tools that enable a better understanding of the bank's risk profile and its resistance to internal and external shocks. Given the limitations of the methodologies, parameters and data used, as well as the uncertainty of assessments and realization of assumed scenarios, stress testing cannot provide absolute security. That means the bank should use stress testing in combination with other risk management and control tools in order to make business decisions based on quality information. It is not rare situation that some sophisticated risk techniques, such as Value-at-Risk, is used as complementary tool with stress testing in order to obtain comprehensive and valid conclusions [1]. Furthermore, the supervisor should not rely exclusively on the results of stress tests when deciding on the risk profile and capital adequacy of the bank, but should use them in combination with other supervisory tools.

The most quoted definition of stress testing is related to the Basel Committee on the Global Financial System in 2000 where stress testing is described as "a generic term for various techniques used by financial institutions to gauge their potential vulnerability to exceptional but plausible events" [2]. According to Schachter (2004), stress testing is "a method for measuring potential future sudden, negative outcomes in the financial instruments portfolio as well as a tool for relaxation of managers in case of an extraordinary risk exposure" [3]. Conducting stress tests in banks is very useful way for prevention of the vulnerability in global financial systems. Banks use stress testing in order to made attempts for quantifying uncertainty and the level of resilience to unexpected events [4]. However, stress testing is introduced to "measure the resilience

of a financial institution or an entire financial system under different adverse events or scenarios. It estimates what would happen to capital, profit and cash flows of individua l financial institutions or the system as a whole if certain risks were to materialise" [5]. This paper is structured in three sections. The first section is committed to the topic of stress testing program creation and description of main characteristics that each stress testing program should contain. In the second section is emphasized the role of risk management function in the bank, because it is a main bearer of operational aspect in stress test conducting. Also, in this section is underlined the role of Executive Board and Board of Directors with their main responsibilities during stress testing program realization. Finally, in the third section is presented the role of stress testing in complex processes of internal capital adequacy assessment process (hereinafter: ICAAP) and recovery plans with described reporting lines and consequences for organizational performances.

FORMATION OF STRESS TESTING PROGRAM

In developing a stress testing program, all banks should consider possible interactions between risks rather than focusing on an isolated analysis of a single risk factor. For this reason, a qualitative approach to reverse stress testing should be applied. Large and more complex banks should have the appropriate infrastructure in place to enable them to conduct a range of different stress tests, from simple portfolio-level sensitivity analyzes to complex bank-wide macroeconomic scenarios. In addition, large and more complex banks should include in their stress testing programs rigorous stress tests at the bank level that cover all significant risks and organizational parts, as well as the interactions between different types of risks.

The stress testing program should include [6]:

1) analysis of the bank's overall operations and types of risks, as well as specific elements of the portfolio, types of risks and business lines;
2) relationship factors between types of risk;
3) stress testing support from the highest to the lowest organizational level and vice versa, including reverse stress testing;
4) a flexible platform that enables the modeling of stress tests at the bank level across business lines and risk types, in the manner and within the deadlines required by the executive board;
5) collecting data from the entire bank;
6) the possibility of intervention in terms of direct adjustment of assumptions.

As one of the indicators showing that the stress testing program is embedded into the risk management and risk function of the bank, the supervisor expects to see stress testing as an integral part of the ICAAP. The ICAAP should be forward-looking and take into account the impact of rigorous scenarios that could affect the bank. This process should demonstrate that the stress test reports provide the management and executive board with a basis for a full understanding of the significant risks to which the bank may be exposed. In order for stress testing to be an important part of the risk

management system, stress tests should be conducted with a certain frequency. In some risk areas, frequent stress testing is required, while comprehensive stress tests at the bank level do not need to be conducted as often. In larger and more complex banks, there will be a number of risk areas that will require more frequent stress testing (e.g., market risks) as a basis for bank-wide stress testing. Otherwise, smaller banks will not have the same set of requirements. The frequency of stress testing should be proportional with the risk area and the need for stress testing at the bank level.

The stress testing program should be supported by an appropriate infrastructure and/or information system that allows for flexibility and an appropriate level of data quality and control [7]. The infrastructure and/or information system should be proportional with the size, complexity, riskiness and business profile of the bank and enable the implementation of stress testing covering all significant risks to which the bank is exposed. The bank should provide sufficient funds for the development and maintenance of this infrastructure and/or information system, including appropriate resources and IT systems, where applicable, to facilitate efficient access to data and its processing in a quantitative and qualitative manner. If the bank applies a centralized approach to risk management and stress testing is mainly conducted at the consolidated level, the stress testing program should provide clarification and analysis of the impact/results of the stress tests conducted at the group level (consolidated stress tests) on significant subordinate companies and/or lines business.

The stress testing program should be effective and enable decision-making at all relevant management levels in the bank. It supports various business decisions and processes, including strategic decisions. The decision should take into account the disadvantages of stress testing and the limitations of the assumptions used.

The board of director and executive board are responsible for evaluating the relevance of the stress testing program results and for taking appropriate measures. These activities may vary depending on the circumstances and other available information and include [6]:

- considering a set of limitations, especially since there is a prescribed requirement that the results of stress tests must be taken into account when determining the bank's limit system;
- use of risk mitigation techniques;
- reducing exposure or doing business in certain regions, countries, sectors or portfolios;
- review of funding policy;
- review of capital adequacy and liquidity;
- strategy review;
- consideration of risk appetite/tolerance; and
- considering the framework for dealing with unexpected and extraordinary circumstances or developing it if it does not exist.

The results of stress tests and outcomes should be used as input information in the process of defining the bank's risk appetite/tolerance and determining the exposure limit system, as well as a planning tool for determining the effectiveness of new and existing

business strategies and their impact on the use of capital. The results of the stress test may indicate that the bank is satisfied with the risk-return ratio or may influence the bank to reduce the riskiness of its portfolio. In described manner, stress testing outcomes directly influence on organizational performances, not only qualitative already quantitative ones. Stress tests are a suitable tool for identifying risks due to events with a low probability of occurrence and significant effects, for which explicit risk appetite levels can be defined.

The bank should define clear responsibilities, allocate resources and establish written rules and procedures to facilitate the implementation of the stress testing program. This program should be governed by internal rules and procedures and clear responsibilities should be defined in the entire stress testing program. Within the policies and procedures of the stress testing program, the following should be defined in detail [9]:

1) types of stress testing and the main objective of each component of the program;
2) the frequency of stress testing, which should vary depending on the type and purpose of the tests;
3) methodological details of each component, including the definition of relevant scenarios and expert judgments; and
4) coverage of business assumptions and anticipated corrective activities, depending on the purpose, type and consequences of stress testing, including the assessment of the feasibility of corrective activities in stressful situations and a changed business environment.

The bank should ensure that sufficient funds are set aside and develop clear procedures for undertaking rigorous stress tests. The bank should document the assumptions and basic elements when conducting each stress test. This includes the rationales and assessments underlying the selected scenarios and the sensitivity of the stress test results to the scope and rigor of the scenarios, as well as the range of business assumptions and planned corrective actions. Good business practice in banking industry shows that operational conduction of stress testing program is in jurisdiction of risk management, while it is necessary that controlling function and evaluation of assumptions should be in jurisdiction of independent functions in organizations that cooperate with risk function closely (such as: Asset Liability Management – ALM department). The bank should regularly review the stress testing program and evaluate the effectiveness and reliability of those tests, qualitatively and quantitatively, in light of changes in external conditions to ensure that they are up-to-date. The frequency of evaluation for different parts of the stress testing program should be adjusted accordingly. An independent control function should play a key role in this process.

A clear and reliable stress testing program (e.g., design, scenarios, expert judgements and results) should be considered across the whole bank. This requires dialogue between risk managers, economists, business line managers and other relevant experts, before being brought to the ExBo for consideration. The discussion between risk managers and business line managers should most often focus on the use and appropriateness of stress testing programs from a business perspective. The contribution of experts within the framework of macroeconomic analysis will probably be most significant in the process

of scenario selection and in the validation of stress testing results. The involvement of various experts and multidisciplinary approach will help ensure that the stress testing program is considered from both a quantitative and qualitative perspective.

Responsibilities for Stress Testing Process among Function Units in Banks: The Role of Board of Directors and Executive Board

The Board of Directors (hereinafter: BoD) has the ultimate responsibility for the entire stress testing program in the bank. This is necessary for ensuring the implementation of the stress testing program at all levels in the bank. Also, it is required that BoD fully understands the impact of stressful events on the bank's overall risk profile. Their engagement will lead to the most efficient use of the stress testing program, especially with regard to bank-level stress testing and capital planning, in terms of outcomes and limitations (e.g., the probability of a subsequent event or degree of subjectivity in the formation of stress test assumptions). Practical aspects of stress testing, such as: identification of risk sources, implementation, management, etc. could be delegated to the level of Executive Board (hereinafter: ExBo). However, the BoD (or a special body formed by the BoD) should be actively involved in consultations, and where necessary critically reviewing, key model assumptions and scenario selection and is expected to review the assumptions of the stress tests from a business perspective.
The BoD should be responsible for giving consent to the ExBo on how it is necessary to intervene, what mitigation measures to undertake and at what time and based on the results of stress tests (as one of the risk management tools), as well as for assessing the quality of such activities and their timeliness. The BoD may consider engaging in stress testing committees, where detailed discussions are held with risk executives about the model design, assumptions, results, limitations, and implications of the stress testing program.
The stress testing program should be an integral part of the bank's risk management system and supported by an efficient infrastructure. Stress testing should be integrated into the bank's risk management process, leading to unambiguous conclusion regarding critical role of the risk function in banks generally. Abovementioned means that banks should apply a structural approach in stress testing implementation.
Structural approach to stress testing, presented in Fig.1, focuses on comprehensive management principles, including [6]:

- the structure of corporate elements related to stress testing and the use of stress tests;
- possible methodologies, including the importance of conducting both, simple sensitivity analyzes and more complex stress testing scenarios;
- a multi-layered approach within the stress testing program, from simple scenario analyzes at the portfolio level to comprehensive analyzes at the level of the entire bank;
- the results (outcomes) of the stress testing program, including the interaction between stress test results and management corrective actions or activities related to mitigation techniques; and

- using stress tests to assess the viability of the bank's capital plan in adverse circumstances in the context of the ICAAP.

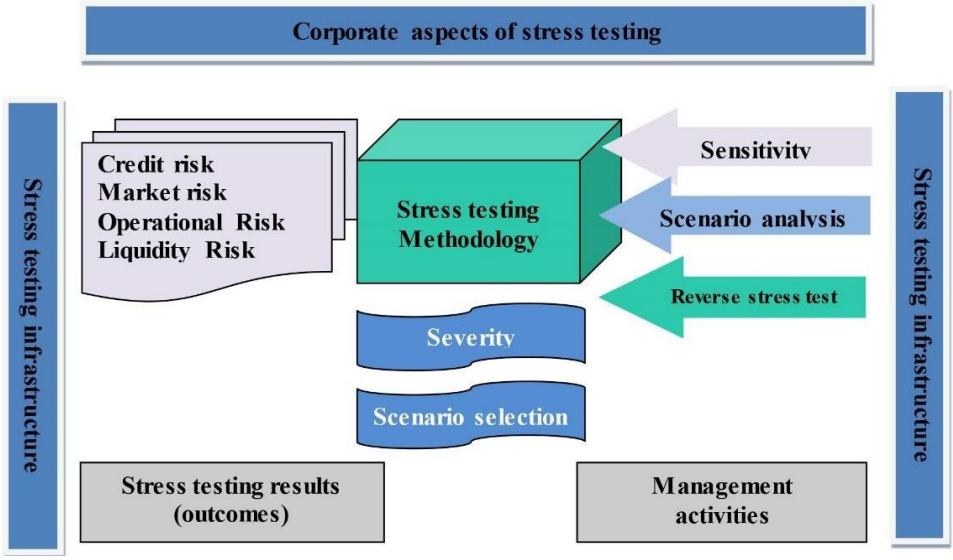

***Figure 1**: Structural approach to stress testing*

Source: Authors

The various stress tests that banks should conduct as part of their stress testing program should be complementary. For example, credit portfolio stress testing should provide input for broader credit risk stress tests and similar, bank-level stress testing scenarios use experience gained from stress testing individual risks, bearing in mind that simple aggregation of results is not possible. It should have in mind that during stress testing the principle of proportionality should be implemented: it means that banks with small market share and simple operations should focus more on qualitative aspects, while larger and more complex banks should develop sophisticated stress testing techniques. It is expected that there are always key qualitative elements running through the stress testing program that clearly identify the links between the bank's risk appetite, its business strategy and the potential impact of external and internal events on its business model. Ultimately, the BoD should ensure that these qualitative elements are logically connected and consistent and in accordance with the bank's defined risk appetite/tolerance. Smaller banks and banks with simpler business activities are usually unable to develop complex macroeconomic scenarios at the bank level within the framework of stress tests. However, they should still conduct stress testing at least in a qualitative way, while quantitatively they could focus on simplified sensitivity analyzes for the specific types of risks to which they are most exposed. This will enable such banks to identify, assess and test their resilience to shocks related to significant risks in their operations.

Stress Effects on Organizational Performances via ICAAP/Recovery Plans

ICAAP is a complex process which is implemented by the highest governing bodies in banks. The process refers to the determination of materially significant risks to which the bank is exposed in their business, their measurement and assessment and determination of internal capital requirements for such risks [8]. The above suggests a mutual connection between the ICAAP methodology and the recovery plan in the bank. It should be noted that the ICAAP is the basis for determining material risks within the framework of organization and development adequate stress test scenarios required for the purposes of the recovery plan.

Before preparation of the recovery plan, the bank usually performs several stress tests aimed at measuring risk factors to which the bank is exposed separately. The stress tests in Serbian banking sector commonly covers credit risk, concentration risk, market risk, operational and liquidity risk as materially significant types of risk. In order to adequately develop a recovery plan, stress tests should be based on the reverse stress tests in order to identify scenarios that lead the bank to the unsustainable business. On the other hand, the ICAAP tests should ensure the maintenance of adequate levels of capital in relation to the risk profile and ensure an adequate redistribution of resources in relation to the specificity of stress situations. Since the two plans have different purposes, they do not have to be identical in approach, but they must be comparable. Stress testing of the ICAAP and recovery plan is conducted regularly (e.g., quarterly or at least once a year), or more often if certain circumstances require it.

The bank regularly examines its financial position by monitoring the recovery indicators, i.e. various factors in business such as: capital, asset quality, macroeconomic and market sentiment. If certain indicator exceeds the previously estimated threshold levels, it signalizes weakness, inadequacy or deterioration of organizational performances. This further triggers the escalation process which leads to the analysis of the situation and if it is need to activate the recovery plan. Managers for monitoring must notify escalation managers immediately after the indicator "goes in" into the yellow zone for the first time.

Escalation managers have the discretion right to inform the ExBo about the limit breach value of the indicator and send an official request to the ExBo to activate the recovery plan. Monitoring managers should also inform escalation managers immediately after any indicator "enters" the red zone every time this happens. Escalation managers are required to report to the ExBo about the entry of the indicator into the red zone and have the discretion right to make an official request from the ExBo activation of the recovery plan. Described reporting lines are direct consequence of managing, monitoring and controlling organizational performances via indicators presented in Fig. 2 through the system of “traffic lights” and definition of three zones: green, yellow and red zone with its thresholds.

Indicators, limits, monitoring frequency	31.12.2016 value of indicator	Zone assess.	Green	Yellow	Red
Capital Ratio					
Capital Adequacy Ratio	18.54%		>14,5%	≤ 14,5% i >13%,	<13%
Liquidity Ratios					
Liquidity Ratio	1.85%		> 1,4	≤ 1,4 i> 1,1	≤ 1,1
Narrow Liquidity Ratio	1.41%		> 1,3	≤ 1.3 i > 0,8	≤ 0,8
Maturity Gap up to 8 days	-0.31%		> 0%	≤ 0 % i > -9%	≤ -9%
Maturity gap up to 1 month	-5.23%		>-9%	≤ -9% i >-18%	≤ -18%
Total deposits decline within one week	0.88%		>-5%	≥5 % i ≤10%	>10%
Loans / Deposits ratio* (loans plus placements with banks/ client depoists plus other banks and CB)	125.00%		<130%	≥ 130 % i <150%	≥ 150%
Increase in interbank interest rates and spreads suggesting potential crisis	no		Lowest levels determined by Treasury Div. bearing in mind current market conditions		
Decline of banking sector deposits (within one month)	4.21%		<8%	≥ 8 % i ≤ 10%	> 10%
Cancellation of MM lines by counterparties	no		no	no	no
Profitability Ratios					
Return on Equity (ROE)	3.4%		≥ 0,0%	≤ 0,0% i ≥ -3.0%	<-3,0%
Significant Operational Losses	0.00%		< 1% regulatory capital	≥ 1% i ≤ 3% regulatory capital	> 3% regulatory capital
Asset quality Ratios					
NPL to total loans ratio	29.10%		<30%	≥ 30% i ≤35%	>35%
NPL coverage ratio/IFRS reserves	60.45%		>50%	≤ 50% i >40%	≤ 40%
Ratio EBA NPE per NBS	19.75%		≤ 22%	> 22% i ≤ 27%	>27%
EBA NPE per NBS coverage ratio/IFRS reserves	56.79%		>50%	≤ 50% i >40%	≤ 40%
High Exposures	119.67%		≤ 200%	> 200% i ≤ 300%	> 300%
Sector concentration (HHI measure)	0.24		≤ 0.41%	>0.41 i ≤0.7	>0,7
Macroeconomic indicators					
GDP quarterly change	2.5%		≥ 0,5%	> 0,0% i < 0,5%	≤ 0,0%
CDS 5Y spread for Serbia's debt	214.6		≤ 250pbs	250 pbs i < 400pb	≥ 400pbs
RSD to EUR change	-0.15%		≤ 2pp	> 2pp i < 5pp	≥ 5pp
RSD to CHF change	0.99%		≤ 2pp	> 2pp i < 5pp	≥ 5pp
Indicators of Market conditions					
Rating under review or/ rating downgrade (SandP)	BB- positive		BB- and higher	B- to B+	Lower than B- (CCC+ and lower)

***Figure 2**: Organizational performances via recovery plan indicators*

Source: [10]

Explanation of "traffic lights" is following: **green zone** – it does not require further actions, just continuing with monitoring; **yellow zone** – it is acceptable but requires actions in order to avoid entrance into the red zone; and **red zone** – unacceptable, requires urgent actions in term of recovery plan activation and consideration of acceptable options for recovery. Yellow and red zone lead to some kind of action, and the decision to be made is a choice between them following options [10]:

- *Accepting violations of threshold levels*: After weighing all the evidence, it may be the case that it would some particular violation involved a truly one-off exception. In other cases, it can be appropriate to review and re-determine previous threshold levels if believes they are too sensitive. Such acceptances should be regularly recorded and regularly re-examined;
- *Taking steps to mitigate/avoid and prevent recurrence*: This is likely the most appropriate response to the breach of the threshold levels of the recovery plan and will require authorization to implement some additional or alternative control measures;
- *Taking some temporary management action:* for example, performing an extended or more intensive monitoring, undertaking a root cause analysis or investigating relationships cost/benefit recovery options.

There are two different steps involved in the bank's monitoring process. The first step is organizing that the appropriate monitoring manager informs about required data in previously defined frequency. Monitoring managers should take all reasonable steps to ensure the integrity of the data, i.e., in terms of completeness, accuracy and timeliness. The second step is the crucial stage of turning data into information by adding context and interpretation (e.g., how the data compares to business performance metrics, whether the data suggests the occurrence of increased or reduced risk i.e., whether the movement is relatively positive or negative). Each manager for monitoring identifies and investigates negative variations and trends and especially analyzes the causes that led to them. Some key considerations from the bank's point of view and effects on organizational performances include following issues [10]:

1) Does the repetition of "yellows" reflect a static or worsening situation?
2) Does the existence of numerous "yellow" represent the overall "red" in the total number?
3) Can the repetition of "greens" suggest that the thresholds are not sensitive enough and should be repeated to be re-examined?

The answer on above mentioned questions determine further steps and efficiency of introduced risk management system in the bank. Consequently, all above has its impact on bank's organizational performances and its positioning in the market.

With technological advancements and extensive use of big data and analytics, risk function in banks will have the potential to become the key pillar for high quality risk decisions, as well as monitoring the effects of those decisions throughout the entire organization in real time. Risk function should be focused on recruitment of employees with new skill sets for working with new technologies and new data sources while understanding operating models, processes and strong collaboration with the other functions.

CONCLUSION

Among other factors, existence of efficient and sound risk management is dependent upon creation of adequate stress testing program. Stress testing enables a better understanding of the bank's risk profile and its resistance to internal and external shocks. Bank-level stress tests should be incorporated into the bank's risk management system and include the views of all relevant bank employees with their expert judgments [12]. The outcome of stress testing is from the great importance for the bank as an organization because it serves as a source of information and a control mechanism used in the risk management process.

Risk function in banks is responsible for conducting and realization of stress testing program, whilst it also reports ExBo and BoD in defined time manner regarding stress testing outcomes. On the basis of those information, management could make decisions which will affect the reduction of risk exposure either through hedging transactions or reduction in own trading position. Furthermore, stress testing outcome could be used as a function of risk controlling within the existing limit structure and as part of the calculation capital requirements and other indicators for ICAAP and recovery plans purposes.

ICAAP is a very sophisticated and complex process implemented by the highest governing bodies in banks. This process refers to the determination of materially significant risks to which the bank is exposed in their business, their measurement and assessment and determination of internal capital requirements for such risks. It is desirable that bank create a mutual connection between the ICAAP methodology and the recovery plan. ICAAP is the basis for determination of material risks within the framework of bank's organization and development adequate stress test scenarios required for the purposes of the recovery plan. As a result of conducted stress testing program within ICAAP and recovery plan of the bank, the organization obtain the insight into movement of main indicators through the system of "traffic lights" and on that basis make an important business decision. Finally, all segments of bank functioning that involves stress testing program conduction pinpoint on unambiguous conclusion that stress testing is a very useful tool for soundness risk management practice which make organization more resilient on emergence of unexpected and extraordinary events.

REFERENCES

[1] Knežević M., & Mirković, V. (2014). Standardized risk measurement methods implementation: experience and lessons for Serbian banking system. In Proceedings: *IV International Symposium Engineering Management and Competitiveness 2014 (EMC 2014)*, pp. 345-350., ISBN: 978-86-7672-224-2.

[2] Bank for International Settlements (2000). Stress testing by large financial institutions: current practice and aggregation issues. Available at: https://www.bis.org/publ/cgfs14.pdf (Assessed: October 7, 2023)
[3] Schachter, B. (2004). *Stress testing*. The Professional Risk Managers Handbook, PRMIA Publications.
[4] Mirković, V. (2014). Stres testovi u finansijskim institucijama. *Bankarstvo*, 43(1): 88-117. Available at: http://www.ubs-asb.com/Portals/0/Casopis/2014/1/UBS-Bankarstvo-1-2014-Mirkovic.pdf (Assessed: October 7, 2023)
[5] National bank of Serbia (n.d.). What is stress testing? Available at: https://nbs.rs/en/ciljevi-i-funkcije/finansijska-stabilnost/pokazatelji/stres-testovi/stres-testovi-mp/stres-testovi-detaljnije/ (Assessed: October 7, 2023)
[6] CEBS (2010). CEBS Guidelines on Stress Testing. Available at: https://www.eba.europa.eu/sites/default/documents/files/documents/10180/16094/ee1e7b7b-5b45-4758-bc64-22b159c3f66c/ST_Guidelines.pdf?retry=1 (Assessed: October 7, 2023)
[7] Vunjak, N., Dragosavac, M., Lukić Nikolić, J. & Davidov, T. (2023). *Menadžment finansijskih rizika u uslovima digitalnog poslovanja*. Beograd: Visoka škola modernog biznisa, Subotica: IRC - Centar za ekonomska istraživanja; Temerin: DLM Consulting. ISBN 978-86-87677-30-2
[8] European Banking Authority (2018). Guidelines on institutions' stress testing. Available at: https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2282644/ (Assessed: October 8, 2023)
[9] Basel Committee for Banking Supervision (2017). Supervisory and bank stress testing: range of practices. Available at: https://www.bis.org/bcbs/publ/d427.htm (Assessed: October 8, 2023)
[10] Banca Intesa (2016). Available at: https://www.bancaintesa.rs/stanovnistvo/finansijski-izvestaji.html (Assessed: October 8, 2023)
[11] Eurobank Direktna (2016). Available at: https://www.eurobank-direktna.rs/finansijski-izvestaji/finansijski-izvestaji/finansijski-izvestaji.881.html (Assessed: October 8, 2023)
[12] Vučinić, D., & Šegrt, S. (2023). MEASURING SYSTEMIC BANKING RESILIENCE: A STRESS TESTING APPROACH. *Journal of Entrepreneurship and Business Resilience*, *6*(1), 100–111. Retrieved from https://jebr.fimek.edu.rs/index.php/jebr/article/view/99