

**TO THE SCIENTIFIC JURY  
DEFINED BY ORDER №38/15.03.2021  
OF THE RECTOR OF  
VUZF UNIVERSITY  
PROF. GR.VAZOV, PHD**

**OPINION**

By prof. Romyana Savova Pozharevska, PhD, Department of Accounting and Analysis,  
Faculty of Finance and Accounting, UNWE. Scientific area: "Accounting, control and  
analysis of economic activity".

Subject: dissertation for the award of the scientific degree "Doctor of Science", field of higher  
education 3. Social, economic and legal sciences, professional area 3.8. Economics

Author: prof. Virginia Ivanova Zhelyazkova, PhD

Topic: Management of Bank Risks in the Transition to Circular Economy

**1. General description of the submitted materials**

By order № 38 of 15.03.2021 of the Rector of the VUZF University prof. Grigorii Vazov, PhD I was appointed member of the scientific jury under the procedure for defense of dissertation on "Management of Bank Risks in the Transition to Circular Economy" for obtaining the scientific degree "Doctor of Science" in the field of higher education 3. Social, economic and legal sciences, professional field 3.8. Economics. The author of the dissertation is prof. Virginia Ivanova Zhelyazkova, PhD - Professor of Economics, Doctor of Economics, Vice-Rector of VUZF University - Sofia, Bulgaria. At the first meeting of the scientific jury, held on March 19, 2021, it was decided that I have to prepare an opinion as part of the procedure. The preparation and submission of the opinion was carried out in accordance with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria (LDASRB) and the Regulations on its implementation.

The opinion was prepared on the basis of the documents presented by prof. V. Zhelyazkova on paper and in electronic version: dissertation for the award of the scientific degree "Doctor of Economic Sciences", abstract with reference to the scientific and applied

contributions, declaration for originality and authenticity, publications on the topic of the dissertation. The publications that the candidate has attached are: a chapter from a book; one large scientific paper; an article published in a scientific journal, referenced and indexed in world-known databases of scientific information; twelve articles and scientific reports published in non-peer-reviewed journals with scientific review or published in edited collective volumes. With a minimum number of points of 100 for the criterion concerning scientific publications, according to the national requirements for awarding the scientific degree "Doctor of Sciences", prof. Zhelyazkova has achieved 170 points.

Also presented for review are CV, diplomas for master's and doctoral degrees, a reference to the citations of the publications of prof. Zhelyazkova for the period January 2019 - January 2021, as well as summaries of scientific papers submitted in connection with the acquisition procedure for obtaining the degree of "Doctor of Sciences". The criterion for citations or reviews in scientific journals, referenced and indexed in world-known databases of scientific information or in monographs and collective volumes is met by 105 points with a single minimum allotment of 15 points per citation of a publication. The criterion for citations in monographs and collective volumes with scientific review is met with 110 points, a single minimum allotment of 10 points per citation of a publication. The criterion on citations or reviews in non-peer-reviewed journals with scientific editing is met by 50 points, a single minimum allotment of 5 points per citation of a publication.

**In conclusion under item 1 of the opinion I summarize that the candidate for obtaining the scientific degree "Doctor of Sciences" prof. Zhelyazkova meets and exceeds the minimum national requirements under Art. 2b, para. 2 and 3 of LDASRB, given that having a required minimum number of 350 points, prof. Zhelyazkova fulfills the indicators with a total number of 585 points. The presented scientific papers are the result of personal work and personal merit of the candidate. There is no legal evidence to the contrary. The submitted documents comply with the requirements of LDASRB (Art. 12) and Regulations of the LDASRB. The dissertation defense procedure is correctly followed.**

## **2. Brief biographical data about the candidate**

Prof. Zhelyazkova is Doctor in Economics (Doctor of World Economy and International Economic Relations). She has completed professional training and specializations under the United Nations Environment Program (2011) and at University Roma Tre, Italy. Her professional development from 2006 to the present is both in the field of higher education

(VUZF, etc.) and as an expert on environmental and social issues at Eurobank Bulgaria. In 2016, she was the national contact point for financial issues of the Horizon 2020 program at the European Commission, Brussels. Since the same year he has been a representative of Postbank in the Energy Efficiency Group of Financial Institutions at the European Commission. From 2020 to the present she represents the bank and participates in the preparation of methodologies and analyzes on reporting on climate change in relation to the activity of the banking sector. She has developed a master's program and new subjects in the field of circular economy, environmental and social risk in investment activities. The academic activity of prof. Zhelyazkova is multifaceted - lecturer of academic courses at VUZF, guest lecturer at universities in the country and abroad, lecturer at government institutions and business organizations, supervisor of PhD students, participant in scientific juries. For the period 2013 to 2021 Prof. Dr. Zhelyazkova takes part in educational, scientific and applied projects, organizes and participates in scientific forums (2017-2021), is member of editorial boards, is a reviewer of monographic works, books and textbooks (2016-2021).

**In conclusion under item 2 of the opinion it can be summarized that prof. Zhelyazkova is a scientist and professional practitioner who works on current problem areas and aspects of limited research at national level, namely the financial dimensions of climate change and environmental issues, as well as the circular economy and their impact on commercial banks. The predominant part of the scientific and applied activity of prof. Zhelyazkova is on the issues studied in the dissertation for awarding the scientific degree "Doctor of Sciences".**

### **3. Topicality of the subject and expediency of the set goals and objectives**

With the onset of climate change and the growing importance of environmental challenges, the need for banks to measure and manage environmental and related social risks as part of the credit risk for their portfolios is increasingly coming to the fore. At present, there is no single methodology adopted at regional or global level in this regard. Leading are the approaches offered by the European Bank for Reconstruction and Development the International Finance Corporation from the World Bank Group. The approach proposed by the European Bank for Reconstruction and Development and the developed scorecard are recognizable and preferred by commercial banks. In its practical application, however, there is a need to adapt to the characteristics of the portfolios of individual banks. It is in this aspect that prof. Zhelyazkova's research is directed.

The identification of problem fields in modern accounting theory and practice in relation to newly generated accounting objects, as a result of the development of the "green" and "blue" economy, are an essential result of scientific research. Indeed, there are many issues in this direction that have not found a completely adequate solution so far, not only nationally but also internationally.

**In my opinion, the author of the dissertation was able to identify current problem fields from different scientific areas and tried to give a solution to the main ones. I appreciate the interdisciplinary approach applied by the author and the synergistic effect achieved as a result of scientific research.**

#### **4. Knowledge of the problem**

The academic and professional training, as well as the active engagement in the business practice of prof. Zhelyazkova predetermine the correct determination of the problem fields in the research area, their analysis and the theoretical argumentation of the proposed solutions. The studied literature (10 in Bulgarian and 148 in foreign languages and Internet sources) on the issue has actually been used and cited in due course. A positive assessment can be given to the general conceptual framework of the construction and presentation of the research and its results. It should be noted that the issue of applying an interdisciplinary approach is not treated at the national level and in this regard the research presented in the dissertation is not only timely but also necessary, both in scientific and applied terms.

#### **5. Research methodology**

The chosen research methodology, a combination of quantitative and qualitative analysis, allows achieving the goal and obtaining an adequate response to the tasks posed in the dissertation. Qualitative analysis was used to clarify the subject and object of study. Quantitative analysis was applied in simulations of different variants of algorithms for the calculation and assessment of environmental risk in bank lending. As a result, in the last part of the study, the author proposes a mathematical model for environmental and social risk assessment in lending, which will help manage the newly arising risks for banks.

#### **6. Characteristics and evaluation of the dissertation**

The dissertation consists of 297 pages, of which 277 pages are the main text and 18 pages are appendices. The main text contains seven figures and thirteen tables. The literature used is 158 sources. The research consists of an introduction, five chapters, a conclusion and

five appendices. The Introduction presents the topicality of the researched issues. The subject, the object, the goal and the tasks of the scientific research are correctly determined. Two hypotheses for the scientific research as well as the methodology of the research are formulated and the limitations for its realization are outlined. The first chapter of the dissertation examines the main theoretical characteristics and regulation of the objects of scientific research. The following are analyzed: the impact of climate change on the economy, the global regulatory framework for their management and the taxonomy of financial risks that these phenomena pose to economic agents. Their significance and the effect of them in the direction of strengthening the main, well-known financial risks are analyzed.

The second chapter is entirely devoted to the genesis and etiology of the concept of "circular economy". The circular economy is considered in the perspective of the challenges that climate and environmental problems generate and in response to the challenges of the related risks and problems. The issues are presented in theoretical terms, as the main theories and concepts that underlie this relatively new scientific field are systematically considered. The circular economic model is presented in an international perspective, analyzing critically and comparatively practices from a number of countries that have a history of conducting policies in this direction. In this way, a general picture of the state of the trends of the transition to a circular economy in the world is shown.

The third part of the research focuses on two main perspectives: the banking system as the main source of attracted resources for the transition to a circular economy and the various investment strategies for the transition to a circular economy. The main conclusion of the author in this part of the study is that the most developed countries do not have regulations to stimulate proactive environmental risk management and lending to projects in this area. The candidate sees opportunities to set requirements in this direction for the banks in Basel III, but is aware that the consensus must be at the international level. The theory of the circular economy analyzed by the author in the second chapter finds its continuation in the search for solutions to the question of how to reach this new economic model. One of the proposals for a solution is to activate the banks to support the state policy in this direction, as they have the necessary financial resources. This decision is completely logical and convincing, and the author points out the specific steps that both the state in the face of its regulatory bodies and the banks must take in order to fulfill this role. To this end, they must in practice transform their business models so as to reflect the new economic reality in which new government policies and new types of risks operate - climate and environmental. From the analysis proposed by the applicant, it is clear that it is far from enough for banks to finance activities that apply circular models.

It is imperative that they have clarity on how to measure and manage new risks so that they have an adequate assessment of the state of their loan portfolios as a whole. Based on the theoretical formulations and the studied international practices in environmental risk management, the author builds, develops and offers in the last chapter of the dissertation her own definition and conceptual model of the term "green bank". In the fourth chapter of the dissertation the author presents her research of the theory and practice in reporting in connection with the transition from linear to circular economics. The connection between this problem and the ability of accounting and reporting at present to provide information on the non-financial performance of economic entities is appropriate, so that banks have accessible and clearly measurable indicators on which to justify their lending decisions. Existing international practices and standards in these areas are analyzed and the main problems in compiling environmental reporting are outlined. In this sense, the analysis of the issue of reporting and outlining its relationship with banks is an original proposal of the author with a clear practical focus. In many cases in the scientific literature the issue of regulating the reporting on the environmental matters in relation to bank lending is underestimated when talking about the management of credit (and environmental, which is part of it) risk by banks. The fact that without indicators for the ecological performance of the companies it is impossible for the banks to make a qualitative and quantitative assessment of their condition is ignored. The candidate has put this issue in its rightful place, devoting a large part of her work to this extremely important problem for theory and practice, outlining a number of key issues of both theoretical and practical nature.

I would recommend the author to include, if deemed appropriate, statements from publications of Bulgarian accountants in the field of environmental accounting or as more correctly should be defined in my opinion "accounting of the ecological environment". With regard to the emergence of environmental accounting, the importance should be given to the innovative ideas of the Bulgarian scientist prof. T. Totev, who in 1976 pointed to environmental protection as one of the areas for expanding the subject of accounting. Ten years later, he further developed this idea and included the protection of the environment and the workforce in the group of potential accounting entities. The known developments and research of representatives of the national accounting theory, although limited, address various aspects of the nature of environmental accounting, accounting for environmental costs and environmental protection, presentation of information in non-financial statements of enterprises (B. Yonkova, 2007; B. Yonkova, K. Yordanov, 2010; N. Nesheva-Kyoseva, 2012; M. Markova, 2013, M. Dinev 2015, R. Pozharevska 2017, 2018). The applicant should also keep in mind that as of 01.01.2017 the

provisions of the new Accounting Act regarding the preparation of the non-financial declaration by some companies, based on Directive 2014/95 / EU amending the Accounting Directive, are in force. The non-financial statement must contain information necessary to understand the development, results, condition of the enterprise and the impact of its activities, relating at least to environmental and social and employee issues, respect for human rights, the fight against corruption and bribery. The non-financial statement should also include: a brief description of the business model of the enterprise; a description of the policies followed by the entity, including the due diligence processes performed; the outcome of policies; the main risks relevant to the entity's activities, including, where applicable and proportionate, its business relationships, products or services that are likely to cause adverse effects in those areas, and the way in which the entity manages these risks; non-financial key performance indicators relevant to the specific business activity. The applicant should also keep in mind that the integrated reporting of enterprises has legal application from 01.01.2017 through the non-financial declaration, which should be prepared by enterprises referred to in sections III and IV of the Accounting Act (large enterprises that are public-interest entities and which, as at 31 December of the reporting period, exceed the criterion of an average number of employees during the financial year of 500, must draw up a non-financial statement).

In the last part of the research the candidate presents her eight factor model for environmental and social risk assessment in the field of corporate lending. This model has a strong practical application and is derived on the basis of a serious analysis of existing international methodologies and practices. Their strengths and weaknesses are outlined first in theoretical terms, and then in terms of their application in banks, using as an example one of the leading systemic banks in Bulgaria. The eight-factor model proposed by the applicant aims to overcome some of the identified and established in practice weaknesses of the existing methodologies and to achieve a more accurate and reliable assessment of the environmental and social risk in lending. It is especially valuable that the model has not remained at a theoretical level, but has been tested in the bank in question using an anonymous database of the loan portfolio of corporate loans for a period of four calendar years - 2016, 2017, 2018 and 2019. The results of this approbation show that the application of the model leads to a more accurate risk assessment, which is essential for the bank, both in terms of effective credit risk management and the implementation of the latest regulation in this direction by the European Banking Authority and the European Central Bank. The results were presented to the bank's management and were highly appreciated, which is indicative of the practical significance of

the model proposed by the candidate, as evidenced by the feedback of two members of the top management of the institution.

The conclusion of the study presents the main inferences of the research. The dissertation contains theoretical summaries and solutions of significant scientific and applied problems, which represent a significant and original contribution to science. The research does not repeat the topic and a significant part of the content of the presented dissertation for the acquisition of educational and scientific degree "Doctor in Economics".

## **7. Contributions and significance of the development for science and practice**

As a result of the scientific research conducted by the author, scientific and scientific-applied contributions stand out in the following aspects:

- Illumination and identification of problem fields in a new interdisciplinary field related to climate change, environmental challenges and the need that arises as a result for the economic model of the world to be oriented towards change.
- The original approach, with a strong practical dimension, in defining and outlining the role that banks as the main source of attracted resources for the world economy are called to play in the transition from a linear to a circular economy.
- The proposed author's definition and developed conceptual model of the idea for "green bank", which clearly shows the transformation that a bank must undergo in order to be called "green" and to act decisively and effectively in the direction of transformation of the linear economic model into a circular. The model has a clear theoretical character, but it is fully applicable in practice, as it reflects the practical dimensions of the issue of transforming the business model of modern banks.
- The proposed author's solutions to the problems related to the assessment and management of environmental and social risk in banks, the relationship of these risks with credit risk, as well as the motivated need to transform the prevailing philosophy of banks regarding the granting of loans, taking into account not only the financial indicators of the applicants for funds, but also their non-financial performance.
- The eight-factor model proposed and tested by the candidate for assessment of the environmental and social risk in the field of corporate lending has a pronounced scientific-applied character.

**The scientific and applied scientific formulations presented as a result of the scientific research are the author's merit and enrich the modern theory and practice.**



## **8. Evaluation of the publications related to the topic of the dissertation**

The publications that the candidate has attached are: a chapter from a book; one long scientific paper; an article published in a scientific journal, referenced and indexed in world-known databases of scientific information; twelve articles and reports published in non-peer-reviewed journals with scientific review or published in edited collective volumes. With a minimum number of 100 points under this criterion, according to the national requirements for awarding the degree of "Doctor of Sciences", prof. Zhelyazkova has achieved 170 points. The publications correspond to the topic of the dissertation. The national requirements and rules regarding the publications for acquiring the scientific degree "Doctor of Sciences" have been fulfilled. The scientific papers presented by the candidate have found a significant reflection in the scientific literature, which is evident from the provided reliable information about citations of her scientific publications: 7 citations in scientific journals, referenced and indexed in world-known scientific databases, or in monographs and collective volumes; 11 citations in monographs and collective volumes with scientific review; 10 citations in unreferenced journals with scientific editing. The publications do not repeat those presented for the acquisition of the educational and scientific degree "Doctor" and for the academic position "Professor". The requirements of art. 29, para. 6 of LDASRB - there is no proven plagiarism in scientific works according to the statutory order.

## **9. Assessment of compliance with the minimum national requirements**

The candidate for obtaining the scientific degree "Doctor of Sciences" prof. Zhelyazkova meets and exceeds the minimum national requirements under Art. 2b, para. 2 and 3 of LDASRB, according to which a minimum number of 350 points is required, and prof. Zhelyazkova fulfills the indicators with a total number of 585 points.

## **10. Personal participation of the candidate**

In my opinion, the scientific papers presented for the purpose of the procedure are personal work and personal merit of the candidate. As of the date of preparation of the opinion, there is no legally proven plagiarism in her scientific papers. The requirements of art. 29, para. 6 of LDASRB are fulfilled.

## **11. Abstract of the dissertation**

The dissertation for obtaining the scientific degree "Doctor of Science" is presented in an abstract of 64 pages. In it, the candidate has presented the main hypotheses, argued and defended in the dissertation. The goals, tasks, methodology and limitations of the research are indicated. The content of the research is summarized. The conclusions made for each of the parts are reflected. There is a reference to the contributions and a list of publications on the

topic of the dissertation. I evaluate the abstract as correctly structured and reflecting the results of the research presented in the dissertation.

## **12. Critical remarks and recommendations**

I have no critical remarks. The dissertation contains theoretical inferences and solutions of significant scientific and applied problems, which correspond to the contemporary achievements and represent a significant and original contribution to science. My only recommendation is, if the candidate deems it appropriate when publishing the dissertation, to include in Chapter Four the main aspects of national publications in the field of environmental accounting.

## **13. Personal impressions**

I have the pleasure to know prof. Zhelyazkova from joint participations in scientific forums and scientific juries. I highly appreciate her academic and professional achievements, as well as the results of her research work.

## **14. Recommendations for future use of dissertation contributions and results**

I recommend prof. Zhelyazkova to publish the results of her dissertation, because I believe that they will be extremely useful for theory and practice, both for financial institutions and non-financial ones. I also recommend that she continues her scientific work in this specific interdisciplinary field.

## **CONCLUSION**

The dissertation contains scientific and applied results, which represent an original contribution to science and meet all the requirements of the Law for the Development of Academic Staff in the Republic of Bulgaria and the Regulations for its application. The dissertation research is a proof that the candidate Prof. Dr. Virginia Ivanova Zhelyazkova, PhD, has in-depth theoretical knowledge and professional skills in professional area 3. 8. Economics. I confidently give my positive assessment of the research presented by the above-mentioned dissertation, abstract, publications, results and contributions, and I invite the esteemed scientific jury to award the degree of "Doctor of Sciences" to prof. Virginia Ivanova Zhelyazkova, PhD in the field of higher education 3. Social, economic and legal sciences; professional area 3. 8. Economics.

08.04. 2021

Sofia

Author of the opinion:

Prof. Rumiana Pojarevska, PhD