



## REVIEW

2020-667/13.04.2023

written by a member of the scientific jury, for the acquisition of the educational and scientific degree "doctor" according to the procedure announced by the University of Economics - Varna, department of "Finance"

### 1. General information

The review was prepared by Prof. Yordan Vasilev Yordanov, Ph.D., scientific specialty Finance, Credit, Insurance (Financial Investments)

**Grounds for writing the review** - Order of the Vice-Rector of the University of Economics - Varna RD-06-55 dated 05/23/23 and decision of the scientific jury dated 06/13/23.

**Author of the dissertation** - Milena Dimitrova Beneva

**Topic of the dissertation work** - PRIVATE PENSION FUNDS' GREEN INVESTMENTS

### 2. Info about the PhD student

For the period 2003-2007, Milena Beneva is a bachelor, majoring in "Finance" at the University of Economics - Varna. After graduation, she continued and successfully completed a master's program in "Banking Management". From 2008 to 2020, she worked as an assistant in the Department of Finance, and since 2018 she has been a full-time doctoral student in the same department.

### 3. General presentation of the dissertation work

#### 3.1. Volume and structure

The dissertation is 228 pages long, not including the list of used bibliography sources and contains the necessary components - an introduction, an exposition in three chapters, a conclusion and references. The list of used literature is in the volume of 380 sources, of which 40 are in Bulgarian. 19 sources of legislation and 8 websites are indicated separately. 39 figures and 38 tables are presented in the exposition of the dissertation, and 18 appendices are presented outside the exposition.

The presented dissertation work has the qualities of an independent monographic study. Chapters one and two provide an in-depth analysis of the characteristics of green investments and pension companies' motivations for investing in them. Here, the author shows a thorough knowledge of the scientific literature and normative regulations, as well as expresses his own



justified opinion. The third chapter consists of an in-depth empirical study based on portfolio models.

I believe that the submitted dissertation is in a form and volume that fully meets the requirements of Art. 27 para. 2 of PPZRASRB.

### **3.2. Relevance of the topic**

The contemporaneity of the topic arises, on the one hand, due to the significant funds accumulated on the accounts of private pension funds in the country and the need for their prudent management. In fact, private pension funds are the largest investors in the debt market and among the largest in the equity market. On the other hand, depletion of non-renewable resources, global warming, etc. require a transition to the so-called "green economy" - renewable, ecological, low-carbon. The author justifies the trendiness of the topic in the introduction, referring to quantitative data and normative regulations.

### **3.3. Object, subject, goals, tasks, thesis, toolkit and literature**

The object, the subject, the research objective and the thesis of the dissertation are clearly and unambiguously defined. The object of the study is the voluntary pension funds in Bulgaria, and the subject - their sustainable and responsible investment. The aim is to evaluate the opportunities for portfolio optimization of the voluntary pension funds in Bulgaria by including green assets in them. The research thesis of the dissertation is that the environmental dimension of the investment policies of the voluntary pension funds in Bulgaria contributes to a more comprehensive assessment of risks and a better performance of their portfolios. Research limitations are also defined.

The toolkit uses a variety of research methods – descriptive and comparative methods, inductive and deductive methods, methods of analysis and synthesis, methods of statistical data processing (descriptive and correlational analysis). The optimization solutions were derived using the MV ("mean-variance") and UPM/LPM ("upper partial moment-lower partial moment") models in the MATLAB® software system. The used literary sources are predominantly from leading researchers in the scientific field.

**4. Assessment of the structure and content of the dissertation** - The dissertation is appropriately structured in three chapters. The first two outline the elements of the title - 'green investments' and 'pension funds', with the analysis focusing on the 'appetite' and ability of the latter to invest in these financial instruments. The empirical nature of chapter three is essentially the proof of the thesis – with impartial claims to originality.





In Chapter 1, the author thoroughly analyzes the literature on the definition of the category "green investment". A number of definitions are provided from multiple literature sources, including institutional ones. It is becoming clear that there is currently no generally accepted definition of the category "green investment". The latter is obviously "overgrown" with auxiliary categories such as "environmental", "social", "low carbon", "climate", "sustainable", etc. This maze of ideas and concepts makes it difficult to build a common picture and understanding of green investments. To overcome this difficulty, the author provides a tabular systematization of the taxonomy of green investments (table 1, page 23). In addition, the application of a non-binary, ranking approach in defining investments in the "green-non-green" spectrum should be noted as a contribution (p. 29).

A classification of publicly and non-publicly traded financial instruments of green investments has been made. They are characterized according to their liquidity, return and transaction costs. Particular attention is paid to the problems of "labeling" projects as "green". Given the high relative weight of debt instruments in pension fund portfolios, special attention is paid to "green bonds". Given the high relative weight of debt instruments in pension fund portfolios, special attention is paid to "green bonds". It might be appropriate in fig. 5, the section on pool investments, to separately include so-called responsible investment funds (USA) and their counterpart "Ethical funds" (UK).

Chapter Two focuses on the motivational drivers for investing in green investments, including values and regulatory constraints. Best practices of green investment leaders and pension fund portfolio allocation in green assets are reviewed. A special place is devoted to the practices of pension funds in Bulgaria regarding green investments. For the studied period, the portfolio performance of the Bulgarian pension funds in the context of green investing was analyzed.

Chapter 3 applies sophisticated techniques for constructing and optimizing the expected return and risk of portfolios without regulatory constraints, as well as 4 more tests where the regulatory constraints vary. After generating the optimal (marginal) portfolios, information is provided on the relative weights of the investment instruments composing them.

Appropriate for the purposes of portfolio selection of pension funds is the application of the UPM/LPM model, which takes into account the possibilities of deviation both below and above the target return. Thus, according to the set level of risk aversion, pension funds could maximize the return above the target value (upside potential) and minimize the downside risk.



A particular advantage of the method is the absence of the assumption of a normal distribution of returns, which is practically absent in financial markets, where kurtosis and asymmetry are widespread.

The dissertation contains scientific or scientific-applied results that represent an original contribution to science. The candidate has in-depth theoretical knowledge of the relevant specialty and abilities for independent scientific research. The dissertation work is presented in the form of a monographic manuscript, and it contains a scientific-applied solution to a real financial problem - portfolio optimization with the use of "green" investments. The vocabulary and stylistic characteristics are at a high level. The abstract correctly expresses the main points of the dissertation work.

**5. Identification and evaluation of the scientific and scientific-applied contributions in the dissertation work;**

The reviewer agrees with the 5 scientific and scientific-applied contributions in the dissertation described in the abstract. To them can be added:

- The analysis of the practices for allocation in green assets by the Bulgarian PODs (pp. 133-141).
- The overview of regulatory regulation of sustainable and responsible investments of pension funds in the G7 countries (typing error in table 13, P7 instead of G7), EU strategies and good practices of leaders in the pension insurance industry.

**6. Publications and participation in scientific forums**

The scientific work of the PhD student has been popularized in 3 reports and two articles and thus is in accordance with the quantitative requirements under Art. 35, para. 1, item 4 of the Regulations for the Development of the Academic Staff at the University of Economics - Varna.

**7. Confirmed or unconfirmed plagiarism in the thesis and the abstract;**

There is no evidence of plagiarism in the dissertation and the abstract.

**8. Critical notes and recommendations**

Essential critical notes are missing. Only those noted refer to incompleteness when translating from a foreign language, namely:

Page 16 below (BRIC-BRICS)

Page 45 – vanilla bonds – plain vanilla bonds





Concepts with unclear etymology are exported in places, such as e.g. "environmental accounting (triple bottom line)" (p. 69), without corresponding explanation. In fact, it is probably about the triple bottom line (TBL), according to which companies should focus on social and environmental issues as well as profits. TBL theory postulates that instead of one bottom line, there should be three: profit, people, and planet.

Page 183 instead of the "conjugate gradient step", it might be more appropriate to use a "pairing" gradient.

*Recommendation:* To pursue with ex-post portfolio performance in future research. The change in portfolio proportions across sub-periods is indicative that applying ex-post portfolio optimization will not provide the reported results. Therefore, after sub-period "A" (probably called "portfolio formation"), one can calculate what the return of the portfolios is during period "B" and so on.

#### **9. Questions to the PhD student;**

1. Chart 5 (p. 71) depicts Motivational Factors for ESG Investing – Degree of Importance (North America vs. Europe). It can be seen that in Canada and especially the US, customer demand is important, and in the US it is a leading factor. In Europe, however, this factor is totally neglected. What do you think the reasons is?

2. From Fig. 37. Efficient frontiers in the MV coordinate system (mean–variance) it is clear that the efficient MV portfolio frontier dominates the efficient frontiers of the UPM/LPM portfolios. This implies that the horizontal axes indicates the standard deviation of the UPM/LPM portfolios. Is that correct? The explanation for this "underperformance" is found on page 205 where, regarding the comparisons of the Sharpe ratio, it is said: "The differences arise from the risk measure. MV portfolios are characterized by a lower standard deviation, since the optimization aims to minimize the variance. At the same time, the UPM/LPM portfolios rely on the deviation below the target as a measure of risk and are characterized by a lower semi-deviation."

The question is: Shouldn't the UPM/LPM portfolios, since they minimize the negative semi-deviation and maximize the positive, have a performance at least comparable to that of the MV portfolio?

#### **10. Conclusion**

The presented dissertation contains scientific and scientific-applied original contributions, meeting all the requirements of the RSARB and PPZRASRB. The dissertation and the abstract



fully correspond to the specific requirements of the University of Economics - Varna. The candidate, Milena Dimitrova Beneva, demonstrates in-depth theoretical and practical knowledge in professional field 3.8. Economics, presents a comprehensive, conscientious, voluminous work and examining the problem set from different angles. In view of the above, without any reservations I give a positive assessment of the conducted research and the achieved results and contributions, and I propose that the esteemed jury award the scientific degree "Doctor" to Milena Dimitrova Beneva in the field of Social, Economic and Legal Sciences, Professional field 3.8 Economics, scientific specialty "Finance".

13.07. 2023

city of Varna

Reviewer:

Prof. Yordan Vasilev Yordanov, PhD

Заличена информация съгласно  
ЗЗЛД и регламент (ЕС) 2016/ 679



## R E V I E W

by Prof. IVANKA DANEVA, New Bulgarian University,  
*Department of Economics, Professional field 3.8. Economics,*  
*scientific specialty "Finance, money circulation, credit and insurance"*

**Subject:** *dissertation work for the award of the educational and scientific degree "Doctor",  
Field of higher education 3. Social, economic and legal sciences, in Professional field 3.8.  
Economics*

**Grounds for presenting the review:** *participation in a scientific jury for the defense of the  
dissertation according to Order No. RD-06-55 of 23/05/2023 of the Deputy Rector for  
Research and Professional development of the University of Economics – Varna and the  
decision of the first meeting of the scientific jury according to Protocol No. 1 of 13/06/2023 .*

**Author of the dissertation:** *Milena Dimitrova Beneva - full-time doctoral student in PhD  
program in Finance at Department of Finance at the University of Economics-Varna.*

**Dissertation topic:** *"Green investments of private pension funds"*

**Research supervisor:** *Associate Professor Stoyan Dimov Kirov, PhD*

The review has been prepared in accordance with the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Rules for its Implementation and the Rules for the Development of the Academic Staff at the UE-Varna.

### **1. Brief biographical data about the participant in the procedure**

Doctoral student Milena Beneva holds the educational and qualification degrees of Bachelor in Finance and Master in Banking Management, both educational degrees were completed at the Department of Finance of UE-Varna. She has completed several courses, including on "Working with specialized software for statistical processing and data analysis (SPSS)", on "Techniques for writing research papers" and "Didactics of higher education" course.

In his career development, PhD student Beneva is part of the academic staff of IU-Varna as an assistant in the Finance Department in the period 2008-2020, and from November 2022 he is a technical secretary in an agribusiness enterprise.

He speaks English at a good level.

Doctoral student Beneva's educational training and professional experience as an assistant make DP "Finance" as a logical continuation of her career development, thus she presents professional potential and scientific interests.

The doctoral student has fully fulfilled her individual plan, which is a reason for her to be legally dismissed with the right to public defense.

### **2. General characteristics of the presented dissertation work**

The peer-reviewed dissertation is 284 pages long and includes an introduction, three chapters, a conclusion, references, appendices and abbreviations used. The development contains 39 tables, 39 figures and 5 graphic images. The bibliographic reference in support of the exhibition includes 418 sources, including 57 in Cyrillic, 342 in Latin and 19 internet pages.

Achieving sustainable economic growth through the pursuit of ESG policies requires the use of environmental, social and governance indicators in making investment decisions with the expectation of a positive long-term impact on asset returns. Since risk management is an inherent feature of a market economy, following the stated policies is accompanied by the study of risk factors and their impact through measurement and monitoring indicators. Fully funded pension funds are undisputed leaders as an institutional investor worldwide. In the context of the policies implemented in the European Union in conditions of a dynamic macroeconomic environment, the problem of the so-called "green investments" of pension funds are emerging with long-term relevance. The presented dissertation work is dedicated to this extremely topical and relatively unexplored problem. The PhD student focuses her attention on the possibilities for optimizing the investment portfolios of the voluntary pension funds in Bulgaria by including "green" investments in them.

***The object of the study*** is the voluntary pension funds in Bulgaria, and its subject - the sustainable and responsible investment of their pension assets. ***The main goal of the dissertation*** is to evaluate the possibilities for optimizing the investment portfolios of the voluntary pension funds in our country by including the so-called "green" assets in them. ***The research thesis*** is that "the environmental dimension of the investment policies of voluntary pension funds contributes to a more comprehensive assessment of risks and a better performance of their portfolios"/p.7/.

***In the first chapter***, based on a detailed and critical analysis of publications by international organizations and by Bulgarian and foreign authors, the concept of "green" investing is considered as mutually related to sustainable and responsible investing, ESG investing and other investment concepts and practices. The concept of "green" investments is examined in relation to the target approach, both financial instruments with an emphasis on those related to ecology and infrastructure are outlined, as well as aspects of the relationship between the degree of development of the capital market and opportunities for green investments. In the second chapter of the dissertation, mainly the regulatory base in other countries and in Bulgaria is presented, regarding the regulations of the "environmental" investments of the privately managed pension funds from the point of view of instruments, disclosure and risks. A third chapter is devoted to the design of the research methodology and the empirical study itself. It fully corresponds to the main goal and formulated research tasks. Two algorithms for portfolio optimization of the investments of the voluntary pension funds in Bulgaria "mean-variation" and UPM/LPM approaches were applied, and for data analysis the Toolbox functions and instruments from the MATLAB program system were used. The data are for the period 2012-2021. A comparative analysis of the results of the empirical research was carried out and recommendations were formulated.

This approach to the development of the dissertation research is logical and completely acceptable, as it clearly outlines the goals-methods-results relationship underlying the precision of the research and the relevance of the obtained results. In this context, the proposals in the dissertation have a practical-applied character.

The dissertation has a balanced structure, the questions considered are in a logical sequence and interrelated, the technical layout is in accordance with the requirements. The scientific problem and its limits are correctly formulated. The terms and concepts used are clarified. The purpose and tasks are linked and fully correspond to the topic of the dissertation work. The applied methodology is completely sufficient to achieve the objectives of the study. The results of the scientific research are presented clearly and logically. The sources used provide a sufficiently complete description of the studied problem. The exposition is well illustrated with tables, graphs and figures, contributing to its understanding.

This defines the dissertation work as an up-to-date, significant for society and high-quality research, with specific scientific and applied results, confirmed by the testing of a



specific methodological toolkit to identify the problematic aspects for the "green investments" of the pension assets of the voluntary pension funds in our country and their practical solution.

### **3. Evaluation of the obtained scientific and scientific-applied results**

The structure of the dissertation is in accordance with the formulated goal and the derived tasks.

In the Introduction, the main problem is reasonably formulated and the purpose, the research tasks, the object and the subject, the methodology of the research, and also its information provision are clearly defined. The goal and tasks are linked and fully correspond to the topic of the dissertation, the limitations of the research are formulated.

In a scientific and applied aspect, the research achievements of the doctoral student can be systematized and presented in the following directions:

*First*, the orientation of the thesis to the problems of following the ESG policy and in particular green investments in the investment decisions concerning the assets of the fully funded pension funds and their impact on the optimization of the portfolios of the voluntary pension funds and on risk management. On the basis of a theoretical analysis and a comprehensive literature review, the conceptual apparatus, the main statements and relations related to the concept of sustainable development and its three pillars, green economy, investments, according to ESG factors and responsible investing, are clarified. In the applied aspect, the approaches in defining the concept of "green investments" and its scope are characterized, the need for a new approach in the assessment of ESG risks is emphasized due to the proven limitations of financial analysis as such. In direct connection with the topic of the dissertation research, special attention is paid to the financial instruments for "green" investing (direct and indirect) and the degree of propensity of institutional investors to invest in them. Against this background, the types of investments in infrastructure and green infrastructure in particular are considered, as well as the "green" bond sector of the capital markets are considered. It is argued that public-private partnerships are unattractiveness for green infrastructure and for institutional investors such as pension funds, and that stocks and bonds traded on regulated markets, mutual funds and exchange-traded funds are the most sought-after "green" financial instruments. Adhering to the aim and thesis of the dissertation, the doctoral student argues for the adoption of ESG integration as the interweaving of ESG factors (with a certain level of materiality) in the overall investment process, highlights and characterizes the approaches/strategies for the realization of sustainable and responsible investments in the different aspects. An adapted model for the integration of ESG factors in the traditional investment process is advocated. In general, in this part of the dissertation the doctoral student should express her own views more clearly and categorically.

*Second*, the doctoral student examines the green investment considerations of pension assets investing from the standpoint of the ESG investment framework, emphasizing the need for the interconnectedness of financial and value considerations. In the context of the importance of the regulatory environment for sustainable pension assets investment, regulatory practices are indicated, despite the fact that there is no country in which investing according to ESG factors is mandatory. Suitable the barriers to "green" investing in pension assets are linked to arrangements for sustainable investing overall. Based on the good practice of pension fund, which are leaders, trends of assets allocation and investment results of their portfolios are analyzed. In this part of the dissertation, a not so successful attempt is made to connect the regulatory principle of investing with the investment regulation of "green" investments in pension funds. I consider the name of item 1.2 of the Second Chapter to be imprecise (the scientific term used is investment on pension funds), and the point itself is devoted to the regulatory aspect in the context of the "green" concept. A global review of the



specific ESG regulations of the sustainable and responsible pension funds investments was carried out, including the European directives (the activity of the institutions for occupational pension insurance and for the providers of pan-European pension products) and the regulation (regarding the overcoming of information asymmetry). The logical continuation of the research leads to the examination of the risks of "green" investments, and in this part the presentation is too general regarding the factors limiting the so-called "green" investments. Adhering to the purpose and thesis of the dissertation, a critical analysis should be carried out not only of the regulations in other countries, but also of the changes in the investment regulation of 2019 in our country, which are identical for supplementary voluntary and mandatory pension funds and are found their reflection not only in the investment policies and risk management rules of only two (as claimed) pension insurance companies. The detailed analysis based on publicly available information regarding the implementation of a "green" investment policy substantiates the conclusions about insufficient focus on "green" investments of pension assets and about its positive impact on investment results.

**Third**, after conducting a review of the optimization models applied in portfolio investing and outlining their advantages and disadvantages, the doctoral student argues and applies in the research the "mean-variation" and UPM/LPM approaches for optimizing the portfolios of voluntary pension funds in Bulgaria by including green assets in them. The mean-variance optimizations are conducted both on the basis of data on the performance of the investment portfolios for the period December 2011 - December 2021 (120 months), due to the long-term effect of environmental factors, and on the basis of data for 72 months (2017 -2021) during the annual rebalancing of the portfolios. The formation of the effective limits is based on a database for 10 years, and the calculations were carried out under various restrictions regarding: a set of assets; combination of conventional and green assets /variants of restrictions-quantitative regulations by instruments, by currency requirements and liquidity/; relative share of "green" assets in the portfolio. The analysis of the obtained results unequivocally outlines the connections between the share of "green" investments on the one hand and the investment performance, additional restrictions - liquidity and currency compliance on the other. The rebalancing of the portfolios through the implemented "sliding" optimization procedure for 5 time periods generates a time series of portfolio allocations under different assumptions (conditions) acceptable according to the objectives of the risk and return ratio. In this regard, the optimal investment choice according to the "safety first" criterion has been investigated at 5 different target return values (EONIA, 0%, risk-free return, inflation and VOLIDEX), based on data for 10 years, forming portfolios with a maximum coefficient of Sharp, as a starting point for building the Capital Market Line. A comparative analysis of the results of the "mean-variation" model with the actual investment performance of the "sliding" effective portfolios of the DPF in Bulgaria for the period 2018-2021 was carried out.

After clearly specifying the assumptions, the optimizations were carried out using the UPM/LPM algorithm model, among which the logical fundamental limitation is for the voluntary pension funds as risk avoiders. Effective limits modeled under potential demand and target returns are derived and the importance of "green" investments is outlined. The effect of changing the return benchmark - a subjective choice of the investor - on the effective limits was tested. As the target return increases when moving "up" along the efficient frontiers, green instruments occupy an increasingly tangible share of the efficient portfolios. Conclusions are substantiated when reviewing the efficient portfolio structures generated in the potential-neutral and potential-demand optimization. The comparison of the results of the applied optimization algorithms from the risk-return positions has been correctly and reasonably carried out in different frameworks. The results of the empirical research unequivocally prove the need to implement an adequate strategy for incorporating ESG



factors into the investment process of the voluntary pension funds in Bulgaria, considering the portfolio performance of pension assets and moving towards "greening" of the portfolio. In this regard, it is recommended to apply a holistic approach for the gradual integration of the sustainable dimension into the activity of voluntary pension insurance funds, given its multifaceted positive impact. Prerequisites are indicated and possibilities for this are indicated.

The results of the analysis of the empirical calculations provide sufficient grounds for confirming the thesis formulated in the dissertation. The processing of the information clearly indicates the presence of one's own contribution to the collection, processing and analysis of the empirical data.

The abstract presented in Bulgarian is 37 pages long and correctly reflects the content of the dissertation work. It fully and objectively reproduces in a synthesized form the content structure, the necessary information, the main conclusions and research results in the dissertation work, it synthesizes a reference for contributing points, publications on the issues of the dissertation, a declaration of originality and as such meets the requirements.

The abstract presented in Bulgarian in the Bulgarian language is in a volume of 37 pages, which fully and objectively reproduces in a synthesized form the content structure, necessary information, basic conclusions and research results of the dissertation work, it also includes information on relevant points, publications on the issues of the dissertation, declaration for originality and as such meets the requirements.

Plagiarism was not detected in the dissertation and the author's abstract according to the procedure in the Law on the Development of the Academic Staff of the Republic of Bulgaria and the Rules for its Implementation and the Rules for the Development of the Academic Staff at the UE-Varna.

#### **4. Evaluation of the contributions of the dissertation work (scientific, scientific-applied)**

The content of the research results argumentatively substantiates the theoretical-methodological and practical-applicability of the dissertation work. Through research, which can be called "pilot", the real applicability of the concept of portfolio optimization through the inclusion of green investments in the structure of pension assets of voluntary pension funds in Bulgaria is proven. This is also confirmed by the following contributions of a theoretical-methodological and applied-analytical nature.

First, the conceptual framework for sustainable and responsible investing through investments in "green" assets in fully funded pension insurance is supplemented and the impact of its application in an international aspect is outlined. The retrospective examination of the concept of sustainable economy and its development in the EU deserves attention. Attention has been paid to the different types of "green" financial instruments and their specific characteristics.

Second, both the analysis and evaluation of the investment policies carried out by the pension insurance companies in the management of the portfolios of the voluntary pension funds, as well as the successful attempt to establish the potential for ecological investments on their investment results, are of a pronounced methodological nature.

Third, with an emphasized methodical character is the application of tools used in the optimization of investment portfolios in financial institutions, including privately managed pension funds. The specific limitations and features of portfolio optimization have been identified. In order to adapt the UMP/LPM algorithm to the specifics of the optimization procedure applicable to VPF portfolios, author scripts were created for formulating the objective function, introducing constraints and setting additional options.



Fourth, the results of the empirical study are fully relevant to the portfolios of the VPF in Bulgaria. The optimization solutions are fully compliant with the current regulations, as it is proven that they are suitable for a number of investor profiles, distinguished according to utility functions. The detailed presentation and analysis at an empirical level of the results of the tested optimization models are the basis for the proposed holistic approach to "greening" the investment process and the investments of the voluntary pension funds in our country, as recommendations with various aspects are formulated.

#### **5. Evaluation of the publications related to the dissertation work**

The 5 scientific publications deposited under the defense procedure - 2 scientific articles in an academic publication and 3 scientific reports in Collections of materials from scientific conferences are an integral part of the doctoral student's research work on the doctoral thesis and ensure the necessary publicity of the research results in front of the academic collegium and interested parties in practice. They meet the requirements for independent and bona fide author scientific research and are sufficient in quantitative and qualitative aspects (in fact, they exceed the minimum national requirements).

#### **6. Critical notes, recommendations and questions**

I do not find any significant inaccuracies in the dissertation, including formal ones. I would like to make the following recommendations to the doctoral student: to apply the research results of the models tested in the dissertation work at the corporate level in the development of a specific strategy and during trainings, including business trainings; to expand in the future its research in the field of economic modeling of the importance of environmental investments for institutional investors.

Given the thoroughness shown in developing the topic of the dissertation, I would like to ask the doctoral student the following questions:

1. Given the changes in the Social Security Code from 2019 regarding investments in "green assets" of fully funded pension funds in Bulgaria, can be argued a specific opinion regarding the optimized portfolio to which a specific pension insurance company should adhere when conducting its investment policy for the managed voluntary pension fund? What should be in general the scope of the criteria/indicators for monitoring such investments made in the portfolios of supplementary pension insurance funds in our country?

2. The doctoral student supports the introduction of the multi-fund organization of pension funds in our country without mandatory incorporation of the green investment approach. At the same time, she proves in her dissertation the importance of green investing for the performance of voluntary pension funds. How does she see the "intersection" between green investing and the multi-fund organization? Given the thoroughness shown in the development on the topic of the dissertation, I would like to ask the doctoral student the following question: Having in mind the amendments to the Social Security Code from 2019 concerning investments in "green assets", what should be the scope of the criteria/indicators for the monitoring of the implemented "green" investments in the portfolio of the additional pension funds in our country?

#### **Conclusion:**

My opinion is that the main goal of the dissertation research has been achieved, the tasks set have been fulfilled with the appropriate methodology and research approaches, a sufficient information array has been used, which has been analyzed with an adequate toolkit, and recommendations have been made for the ecologically oriented pension funds investments. The doctoral student has in-depth theoretical-methodological knowledge and the ability to carry out independent scientific research, which fulfills all the basic requirements of



of the Law for development of the academic staff in the Republic of Bulgaria for the acquisition of the ONS "Doctor". The result of the dissertation research is the confirmation of the formulated research thesis.

Bearing in mind the relevance and significance of the research carried out, the intended scientific and applied results and the specific conclusions drawn and their practical significance, I give a positive assessment of the dissertation work and propose to the honorable members of the Scientific Jury **to decide on the awarding of the educational and scientific degree "doctor " of Milena Dimitrova Beneva** - doctoral student at the Doctoral program "Finance" in professional field 3.8. Economics, scientific field "Social, economic and legal sciences".

14/07/2023

Заличена информация съгласно  
ЗЗЛД и регламент (ЕС) 2016/ 679

~~Д-р. Иванка Daneva, PhD~~