

External Examiner Report on Doctoral Dissertation for PhD Degree

By: Prof. Dr. Bogomil Borisov Manov, Department of Finance, Faculty of Finance and Accountancy, UNWE, Sofia Professional field 3.8 Economics, Scientific specialty "Finance, money circulation, credit and insurance"

Regarding: Dissertation work for acquisition of the educational and scientific degree "Doctor" in professional direction 3.8 Economics, in the scientific specialty "Finance, money circulation, credit and insurance" (Finance)

Name of the Candidate: Kaloyan Dragomirov Pargov

Doctoral Thesis Title: "Energy security and energy strategy of the EU and Bulgaria: financial and economic aspects and challenges"

1. General presentation of the dissertation work

The scientific supervisor of the doctoral student is Prof. Dr. Stoyan Stanimirov Prodanov from D. A. Tsenov Academy of Economics, Svishtov.

Reason of writing the review: member of the scientific jury for the defense of the dissertation according to Order No. 52/20.01.2023 of the Rector of D. A. Tsenov Academy of Economics, Svishtov.

The dissertation comprises 217 standard computer pages and consists of an introduction, three chapters and a conclusion. The bibliographic reference contains 158 literary sources, the majority of which are in English. There are 95 figures and 5 tables. The PhD candidate has submitted 4 publications related to the topic of the dissertation.

In general, the dissertation is well structured and its content corresponds to the chosen topic.

2. Assessment of the form and content of the dissertation work

The doctoral thesis is characterized by the following important moments:

First. An interesting and significant research topic was chosen.

The significance of the topic is indisputable and it is justified by the following more important points:

- The growing need for energy with a population already exceeding 8 billion people on the planet;
- The impact that individual energy sources have on the climate and, conversely, the impact of the climate on the choice and structure of specific sources in the entire system of global, continental, community, regional and national energy;
- The presence of energy mainly directly and as an exception indirectly in the cost price of almost all goods and services, which affects their price, and through it also the income and consumption in every society and its constituent elements;

- The uneven distribution of different sources of energy within the socially accepted borders of the countries and hence, the possibility of energy being used as a means of influencing in a positive or negative sense by one country or community on other countries or communities.

What makes this topic interesting, important and meaningful is the fact that energy security and efficiency directly affects the individuals, families, communities and the society as a whole. It would not be an exaggeration to assume that without energy, modern life on the planet would cease to exist.

Second. Well presented information basis of the empirical research.

Sufficient and proper information and statistical sources have been used. The information is presented correctly, arranged logically and consistently. The investigated phenomena and dependencies are well illustrated. I found no inaccuracies and/or incorrect calculations and conclusions.

Third. Properly defined object and subject of the research.

The doctoral student has justified the energy security of the EU and Bulgaria as an object of the research. The subject of the thesis is related to the financial and economic aspects and challenges to energy security and the energy strategy of the EU and Bulgaria. (p. 6).

Fourth. Clearly formulated research thesis, purpose and specific tasks of the dissertation work.

The doctoral candidate defines the research thesis as follows: "energy security is a key component of the energy strategy of the EU and Bulgaria, which should be supported with a financial and economic analysis based on multiple aspects and challenges of the energy balance and the dynamics in the energy mix with a trend and force majeure nature" (p. 6).

The main purpose of the dissertation work is "to present in a discussion perspective the evolution in the energy strategy of the EU and Bulgaria as a sphere for ensuring energy security, based on multi-factor financial and economic analysis, trend modeling of the energy balance and assessment of the dynamics in the energy mix" (p. 6).

The methodology used in the scientific research is also specified in details. It is based on the use and application of descriptive statistics, tabular and schematic illustration, verbal-graphic modeling, regression research and beta analysis (pp. 7-8).

Fifth. Well systematized and visualized data.

As stated earlier, the dissertation has 95 figures and 5 tables, which are properly formatted with appropriate and correct data. The tables and figures give a good and clear idea of the researched issues.

Sixth. The selected indicators are used correctly.

The necessary argumentation for their choice has been made. The statistics are selected appropriately and commented correctly. In general, the data used are sufficient and properly related to the specific problems investigated in the thesis paper.

Seventh. Well structured work in terms of contents.

There is consistency in the exposition, as well as good proportion between the individual chapters. Its volume is sufficient to reveal the scientific problems in the chosen topic. The writing style is academic and clear. The thesis statement is easy to understand. No logical contradictions were found.

Eight. The rules of scientific ethics were followed.

The author has correctly cited the sources of information he used. No plagiarism was found. It should be noted that there is a strong argumentation of the author's unique position on the problems he is observing in the dissertation.

Ninth. Evaluation of the dissertation abstract.

The author's abstract presented by the doctoral student Kaloyan Dragomirov Pargov largely reflects the main and most essential moments of the dissertation work. As such, it is a good summary for a quick but meaningful introduction to key milestones and achievements of the candidate's work.

Tenth. Evaluation of dissertation publications.

The author has submitted a list of publications related to the dissertation work. It is composed of four publications – one study, one article and two reports in scientific conferences. All publications, except one of the reports, are single-authored papers. The study is titled: "Historical analysis and evaluation of the energy policy of the European Union at the beginning of the XXI century". The article is entitled "Energy balance of the Republic of Bulgaria - strategic analysis". The title of the self-authored report is "The resource reserves of the Caspian region and the Black Sea as an alternative to Russian energy supplies", and the one co-authored with Prof. Dr. A. Zahariev is titled "Market anomalies in the "Day ahead" segment of the Independent Energy Exchange - Bulgaria's experience in the transition to the "European green deal". All cited publications are directly related to the topic of the dissertation work. They are also evidence that some of the results indicated as scientific contributions in the presented dissertation work have been distributed and publicly accessible.

3. Scientific and scientific-applied contributions of the dissertation work

The dissertation contains scientific-theoretical and scientific-applied results. Scientific and theoretical contributions include:

- The understanding of the concept of energy security is argued. It has introduced elements of integration at different levels and in different directions, based on optimal pricing in the conditions of a global low-carbon transition and effective economic growth.
- With the help of correlation analysis, the essential quantitative relationships between the prices of the main energy resources of the countries in Europe have been identified.

- The geopolitical possibilities for correction in the financial parameters of the main energy resources in Europe are justified. Some potential opportunities for cooperation between the individual European countries are also argued.
- The elements of the energy balances of Bulgaria and the EU have been systematized and modeled.

Scientific and applied contributions include:

- On the basis of the evaluations made of the energy three-component rank and the rank of the regional economic potential of the countries in Europe, a strategic possibility for an energy security union between the countries of Sweden, Denmark, Great Britain, France, Austria, Germany, Hungary and Spain was deduced and justified;
- The effects of the "Day Ahead" market segment of the Bulgarian Independent Energy Exchange with consideration of the price market anomalies in 2022 in a situation of connecting two national exchanges with different time needs and different rhythm in the demand and supply of electricity have been critically evaluated.

4. Critical notes, questions and recommendations on the dissertation work

There are also some gaps and weaknesses in the candidate's work. The most important of them are the following:

- a) At the very beginning of the dissertation, it would have been appropriate to make a systematic review of the authors working on these and similar issues and of their achievements to date. All this may now be judged indirectly.
- b) It would be appropriate to have a scientific discussion with different authors working in the same field revealing their views and arguments.
- c) In some places, tautology, some spelling mistakes and the use of foreign words can be found. The admitted weaknesses in the dissertation are insignificant and they do not diminish the merits of the thesis work.

When defending the dissertation, it is good to answer the following questions:

1. What should Bulgaria have done, but did not do, to ensure greater security and diversification of the various energy sources?
2. From the point of view of the open nature of our national economy, but with the priority of our national interests, what would be the effective structure of the used energy sources in our country by 2030?
3. Is it possible to look for a positive correlation between the growing trend of economic backwardness of Bulgaria in relation to Romania over the last decade and the effectiveness of the energy policy in both countries?
4. What could be done with the coal deposits, which in the foreseeable future will become more and more expensive, therefore more undesirable for energy extraction in our country?
5. Do you think that the financial rehabilitation of Toplofikatsia Sofia should be at the expense of Sofia taxpayer's or at the expense of all Bulgarian taxpayers?

6. Summary conclusion and opinion

In conclusion, I believe that the dissertation "Energy security and energy strategy of the EU and Bulgaria: financial and economic aspects and challenges" presented for review in the

professional field 3.8 Economics, in the scientific specialty "Finance, money circulation, credit and insurance" (Finance) in D. A. Tsenov Academy of Economics, Svishtov, possesses the necessary qualities and gives grounds for the candidate Kaloyan Dragomirov Pargov to be awarded the educational and scientific degree "Doctor".

12/02/2023
Sofia

Reviewer:
/prof. Dr. Bogomil Manov/