REVIEW

By **Prof. Yuliyana Ivanova Blagoeva-Yarkova, PhD** –
member of the scientific jury designated by Order No 2610/11.10.2021 of the Rector of
Trakia University

Re: Public defense of the dissertation work for the acquisition of the educational and scientific degree **"Doctor"** in professional field 3.8." Economics, scientific specialty "Economics and Management (Agriculture)"
Topic of the dissertation work: Economic Assessment of Regional Sectoral Structure
Author of the dissertation work: Ivanka Stoycheva Zhekova – independent doctoral student at the Department of Economics, Faculty of Economics, Trakia University
Academic Advisor: Assoc. Prof. Desislava Marinova Ivanova MD

1. Procedure

The dissertation work was discussed at an extended department meeting of the Department of Economics, Faculty of Economics, Trakia University on September 10, 2021. It was redirected for public defense, in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for Its Implementation and the Rules on the Development of the Academic Staff at Trakia University.

After reviewing the submitted documents, I have found that all procedural requirements have been met.

2. Background of the PhD candidate

The doctoral student Ivanka Zhekova was born on May 2, 1973. She graduated the Secondary Vocational School of Economics, Stara Zagora in 1992. In 1997 she acquired a Master's degree in Economics at the Academy of Economics "D.A. Tsenov" - Svishtov, in the specialty of Accounting and Control. Ivanka Zhekova has worked as: 1) Accountant for the Factory Complex "Saglasie", village of Zetyovo (1996-97); 2) Accountant at the Secondary Vocational School of Trade "Knyaz Simeon Tarnovski", Stara Zagora (1997-2003); 3) Assistant Professor in the Department of Economics at Trakia University (2003 - present). She speaks English and Russian.

Ivanka Zhekova was registered as an independent PhD student (Order No2503/16.12.2013 of the Rector of Trakia University) in the doctoral program "Economics and Management (by Industry Branch)", professional field 3.8. "Economics", in the area "Social, Legal and Economic Sciences", Department of Economics, Faculty of Economics of Trakia University. The training period was three years. By Order No 3012/13.12.2017 of the Rector of Trakia University, the PhD candidate was delisted with the right of defense.

Ivanka Zhekova is a lecturer in Statistics and Economic Statistics of all majors of the bachelor programmes at the Faculty of Economics.

3. General assessment of the dissertation work
Pertinence of the topic and necessity for this research work.

The topic of the dissertation work is related to the study of one of the strong factors for regional economic growth – the economic structure at regional level. Despite the ongoing regional cohesion policy at European and national level, the existing regional socio-economic inequalities in Bulgaria continue to affect its implementation. The Seventh European Commission Report of 2017 on Economic, Social and Territorial Cohesion shows, that, despite the reported reduction of the interregional disparities at EU level, the identified problems still give rise to the need for a strong cohesion policy.

Therefore, any research related to the search and use of opportunities that transform the regional sectoral structure into a boost for economic growth becomes a useful tool to support the programming and planning of regional economy and development. Moreover, in 2017 the EC also issued a document on competitiveness in low-income and low-growth regions, where support for smart specialization is indicated as a priority recommendation. Therefore, such development as the current dissertation work can contribute to the further regional smart specialization of Bulgaria.

Of the six NUTS 2 regions, only the South-West region ranks among the so-called "regions in transition" (GDP per capita), while the rest are included in the group of less developed regions. In a dynamic aspect for the period 2000-2017, only the South-West Region changed its group – from "less developed" in 2000 to "region in transition" in 2017. This fact also provokes an investigation into the place of regional sectoral structure in the reported regional levels of socio-economic development.

The dissertation work is up-to-date in terms of its purpose, subject matter and subject of study. The author aims to assess the role of the regional industry structure in shaping economic growth. To achieve this objective, the selected subject of the dissertation work is the level, dynamics and regional differences in relation to the main economic sectors, which also defines the thesis subject, complying with the classification of EU territorial units NUTS, the focus being NUTS level 2 and NUTS 3.

The presented thesis is a response to the need to explore by scientific means the process of sectoral restructuring and achievement of high economic growth at a national and regional level. Scientific developments and publications on this issue are commonly related to individual aspects and a specific context, which makes the peer-reviewed thesis work original and timely with respect to its temporal and territorial scale.

The methodological approach used and the selected methods in the implementation of the scientific study are innovative and can be multiplied in other fields of science and practice – modern approaches and software productions have been applied for analysis and evaluation of the level and dynamics of the industry structure and structural differences.

The PhD candidate Ivanka Zhekova demonstrates good knowledge of the work of Bulgarian and foreign researchers on the issues covered by her thesis. She has used specific concepts of selected authors. The literature sources have been used in good faith and correctly in the interpretation of the issues studied.

Ivanka Zhekova has realized the set goals and presents herself with scientific work, which has a contemporary and up-to-date sound; it has been developed under difficult conditions and restrictions. The PhD candidate demonstrates a high level of theoretical training in the main scientific fields of the dissertation. Significant research work has been carried out and the ability to do independent research has been demonstrated.

The PhD candidate Ivanka Zhekova has worked independently on the dissertation submitted for review, the author's thesis summary, and the inquiry on the contributions and scientific publications related to the dissertation work.

Assessment of the form and content of the dissertation work

The thesis submitted for review amounts to 235 pages and contains a basic text of 208 pages, and 27 pages of annexes. It has been illustrated with 35 tables and 16 figures. The sections in the dissertation include: "List of abbreviations", "Introduction", "Three chapters", "Inferences and recommendations", "Conclusion", "Literature used", "Annexes". The literature used contains 219 sources, of which 49 in Cyrillic and 170 in Latin. The structure of the sources includes 40 articles and monographs of 25 Bulgarian authors (In Bulgarian and English), 169 scientific

publications of 199 foreign authors (In Bulgarian, Russian and English) and 10 institutional reports (EC, OECD) in Bulgarian and English.

The content of each chapter corresponds to the research objective and tasks. The work carried out in each structural part of the dissertation and the relationship with the previous and subsequent sections has been highlighted precisely and clearly. The logic of the dissertation is convincingly defended.

The introduction purposefully defines the pertinence of the problem in the context of both our EU membership and the challenges of our modern times. A 1999 EC report was cited, which could have been supplemented by subsequent reports related to economic, social and territorial cohesion, as well as to less developed EU regions.

The object, subject, goal, thesis statement, working hypotheses and the logically derived tasks have been correctly structured. The main methods used have also been indicated, as well as the information environment and the limitations of the conducted research and analysis.

Chapter One is devoted to the theoretical foundations of the assessment of the regional branch structure. A good overview has been made of the theories of economic growth: classical, neoclassical, modern. There is no separate group of theories based on Keynesianism, which in essence and by factorial determination of growth contrast with neoclassicism. Keynes has been mentioned only in the discussion of the growth factors. It is important for the doctoral student to highlight the affiliation of the conducted regional economic policy to a certain group of theories, because this is crucial for the applied measures and instruments for regional growth and development. In separate subsections, attention has been paid to the indicators for measuring economic growth, as well as to the methods for determining regional structural differences. Along with the methods indicated in the dissertation for evaluating the branch structure by assessing specialization and concentration, incl. the localization coefficient, application of Shift-share analysis, it should also be noted that the method of the economic base and the Input-Output method have not been specified. Even if there are arguments for excluding them from the applied analysis in the following sections, the theoretical section would benefit from their reference.

In subsection 1.3.1. when presenting the indices of regional specialization, it is stated that the author of the localization index is Izard (1960). The localization coefficient was proposed as early as 1950 by Hildebrand, GH and A. Mace Jr. It shows the relative specialization, whereas a distinction must be made between relative and absolute specialization, which has not been indicated in the dissertation. The localization index and the localization coefficient are identical - they have the same meaning and interpretation, which is why they do not need to be interpreted independently.

A contribution of the doctoral student is the methodological statement for determining the regional structural changes and differences through comparative application of indices developed by different authors (Table 1.3.2.1.3.)

When considering the theoretical foundations of the dissertation and the summaries and conclusions presented at the end of the first chapter, it is expected from the author to provide a more specific, more critical author's commentary and a better reasoned focus on certain concepts, methods and indicators.

I fully support the author's opinion that the territorial approach should be strengthened in the national policy, which is also incorporated in the EU programming documents for the period 2021-2027.

Chapter Two presents the results of the empirical study of structural differences in the EU, incl. Bulgaria, according to the aggregated nomenclature of economic activities A10, as the survey period covers 2000, 2007 and 2017. The finding at the national level is such that Bulgaria has a higher share of employment than the EU average in both agriculture and industry, which has not changed in all three years. The doctoral student correctly linked the rate of reduction of these shares in Bulgaria with a subsequent assessment of the relative productivity in the sectors.

An analysis of the dynamics of changes in the relative shares of both employees by sector and the structure of GVA is presented, through the indicator "sum of the square of the differences". Thus, the author confirms the hypothesis of a connection between the share of GVA in the agricultural sector and the general level of development of the national economy.

In this section of the dissertation a large-scale study of the regions of level 3 (NUTS3) - 28 districts, has been made, and many logically related indicators were defined: the structure of employees by economic sectors, the degree of change of relative shares of employees (SSD), the relative share of the branches in GVA, the degree of change of the relative shares in GVA (SSD), the relative labor productivity, localization coefficient of the branches by districts, and the integral coefficients of structural changes. Moreover, an author's methodological scheme for the selection of districts and industries has been developed, which are additionally included in the shift-share analysis for assessment of the national, structural and local effect in the reported dynamics in the structure of employees. This increases the reliability and significance of the inferences. Inference 4 on page 135 indicates the areas in which there are the largest structural changes in employment. However, with regard to the structure of GVA - the summary assessment is only for the regions of level 2 (NUTS 2), and given the information in Table 2.1.2.3. the level and dynamics by areas could be indicated, outlining the three groups - industrial, agricultural and service areas.

Chapter Two impresses with a very good illustration with tables and figures, which present the results of the processing of objective statistics.

Chapter Three performs two of the key tasks in the dissertation: 1) study of the relationship between the relative productivity and selected factors for the formation of structural differences; 2) formation of regional clusters according to employment and relative labor productivity.

Logically, the initial section of this chapter is a presentation of the factors leading to the formation of structural differences. Given the presence of only two cited authors in item 3.1.1. and item 3.1.2, I admit that the author of the dissertation relies on her general theoretical preparation in choosing the described factors. However, let us keep in mind that the factors must be distinguished from the indicators with which they are measured. For example, the first economic factor mentioned (p. 142) is the "economic activity rate". In fact, the factor is "economic activity", and it can be presented as an absolute or relative (coefficient) indicator. The statistical and economic analysis begins with the ranking of the six regions of level 2 and the 28 districts by selected economic and demographic indicators. The relationship between the selected indicators and GDP per capita is assessed by a correlation coefficient. It has been established that the structural indicators - the share of GVA and the relative share of the employed by sectors - are of leading importance for the formation of GDP per capita. A regression model was compiled to assess the individual and overall impact of selected factors on the relative labor productivity (efficiency indicator), and the respective statistical assessments to ensure the significance of the model were observed. A collinearity assessment of the selected variables was also performed. As a result of the conducted hierarchical cluster analysis, groups of areas with similar characteristics of stagnation and relative labor productivity were formed, illustrated with dendograms for each of the analyzed years.

I accept the summaries, inferences and general recommendations as a result of the analyzes in the third chapter. One of the important conclusions is the deepening of the interregional differences, which is in contrast to the applied Cohesion Policy and the funds used under the operational programs related to regional development during both elapsed programming periods.

The logical conclusion of the dissertation is the section "Inferences and Recommendations". The thesis that the differences in the structure by main economic sectors are a significant factor predetermining the national and regional economic growth has been

confirmed. I accept the opinion stated by the author that in order to be categorical about the local regional advantages, it is important to know the lower levels of aggregation of industry groups. This is probably one of the reasons for the absence of specific proposals on the formation of the sectoral structure by regions and districts, which would contribute to raising their socio-economic level.

4. Evaluation of the scientific and scientific-applied contributions of the dissertation

1. Contribution to the construction of a comprehensive methodological approach in assessing the regional industry structure. This approach is not of limited situational or pilot importance, but can serve as a basis for other similar analyses and assessments.

2. The results of the successful application of the methodology through research in the EU, Bulgaria, 28 districts and 6 regions are also a contribution. This proves the applicability of the methodology, but also provides rich information over a wide period of time by defining specific indicators:

a) The relative shares of the employed by main sectors, the structure of GVA and relative labor productivity in the EU, Bulgaria and the 28 districts are determined, and a comparison is made at national and regional level by years 2000, 2007, 2017.

b) The indicator for the degree of structural change SSD for the periods 2007-2000, 2017-2000, 2017-2007 is calculated by indicator share of employees, share of GVA, relative labor productivity

c) The integral coefficients for structural changes by sectors for the periods 2007-2000, 2017-2000, 2017-2007 are determined

3. The main factors influencing the structural differences have been selected and analyzed, and statistical and economic methods have been applied to determine the factor influences both in terms of the regional branch structure and in terms of the efficiency measured by the relative labor productivity.

In general, the dissertation has a methodological and applied nature and its results can be used to integrate the assessment of the regional industry structure in the developed planning documents for the period 2021-2027.

5. Recommendations and questions

I recommend to the author to apply a discussion approach when presenting and quoting other authors and opinions. Thus presented, in some places the text is declarative without personal opinion, or discussion. The justification of the selected factors and indicators is insufficient. I also recommend a closer connection of the regional branch structure with smart specialization at a regional level. There are some technical shortcomings (no source under some of the figures, spelling mistakes, etc.)

The recommendations and remarks made do not call into question the merits of the reviewed dissertation. It is an in-depth, competent and timely study that should be of interest to both the scientific community and the public authorities responsible for developing regional development policies.

Question:

How does the PhD student see the role of the agricultural sector in the process of economic transformation of carbon-intensive regions, such as Stara Zagora district?

6. Thesis summary, inquiry on the contributions and publications related to the dissertation

The author's thesis summary is 39 pages long. It corresponds to the dissertation work by outlining precisely and concisely the studied problems. It consists of seven parts, which include a general description of the dissertation, content of the dissertation, inferences and

recommendations, main contributions of the dissertation, conclusions, publications on the dissertation, and a summary in English.

The report on the contributions correctly reflects the scientific achievements of the doctoral student Ivanka Zhekova. They correspond to the actual results of the development, which have contributing elements for both science and the practice of regional development.

The doctoral student Ivanka Zhekova has 3 scientific publications (2 independent and 1 co-authored), directly related to the topic of the dissertation. Their volume amounts to 31 printed pages. One of the publications was presented as a report at an international scientific conference. The scientific papers dedicated to the discussed issues fully meet the quantitative and qualitative criteria and requirements for necessary publications in the defense of a dissertation for the award of PhD degree.

Conclusion:

The reviewed dissertation on the topic: "Economic Evaluation of the Regional Branch Structure" by Ivanka Stoycheva Zhekova fully **meets** the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, and the Regulations for the Development of Academic Staff at Trakia University.

The dissertation authored by Ivanka Zhekova for the purposes of awarding her with a doctoral degree, has merits which have already been mentioned above as contributions.

As a reviewer **I offer my positive evaluation of the dissertation submitted for review and propose to the esteemed scientific jury to vote in favor of awarding the independent doctoral student Ivanka Stoycheva Zhekova with the educational and scientific degree of "Doctor" in professional field 3.8 Economics, scientific specialty "Economy and Management (Agriculture)".**

11.11.2021   REVIEWER: ....

                                                        /Prof. Yuliyana Yarkova, PhD/

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