

OPINION

С.А. "Д.А.Тсенов" СВИШТОВ
Бх.№ 93.00 - 6 / 28.02. 2024

regarding a dissertation work for the award of an educational and scientific degree "doctor" in the scientific specialty "Statistics and demography" in the SA "D. A. Tsenov", Svishtov

Prepared the opinion: assoc. prof. Alexander Tsvetanov Naydenov, PhD, lecturer from the Department of "Statistics and Econometrics", Faculty of "Applied Informatics and Statistics", UNWE-Sofia, doctor of 05.02.06 "Statistics and Demography" (Diploma No: 34089/17.05.2010, confirmed by Protocol 4/16.03. 2010), associate professor in the scientific specialty "Statistics and Demography" (Certificate No.: 70/2017, Order CR-800/01.03.2017, registered in the NACID).

Author of the dissertation: Diana Ivanova Markova

Topic of the dissertation: "Statistical study of demographic processes in Bulgaria - regional aspects"

Reason for presenting the opinion: participation in the composition of the scientific jury for the defense of the dissertation work, according to Order No. 76/09.02.2024 of the Rector of the SA "D. A. Tsenov", Svishtov.

I. General presentation of the dissertation:

1. *The subject* of the scientific research is the in-depth examination of the problems related to the regional aspects of the demographic processes in Bulgaria.

2. *Volume* - the dissertation work for obtaining the educational and scientific degree "doctor" has a total volume of 222 pages, of which 173 pages are the main exposition, 1 page is a declaration of originality, 16 pages are used literature (206 sources in total) and 32 pages with appendices (22 in count). The paper contains 21 figures and 20 tables, and is structured in: introduction, three chapters, conclusion, references and appendices.

3. *Structure* - the scientific development has a clear structure and fully follows the logic of the investigated problem.

The introduction substantiates the need to conduct a thorough study of the main demographic processes in a regional aspect. Correctly defined: the object, the subject, the purpose and tasks of the research. The author's research thesis is that: "...between the regions of the country there are differences in terms of the state and dynamics of demographic processes, and these differences deepen under the influence of demographic and socio-economic factors". The PhD student has also made a brief description of the analysis methods, the information base used, as well as the restrictive conditions of the research.

In the first chapter, the conceptual basics and specifics in the measurement of the main demographic processes are discussed. A special place is devoted here to the key terms and indicators concerning these processes, as well as to their place in modern statistical research. In short, the chapter also examines the main demographic, socio-economic and psychological factors that influence demographic processes. The last 17 pages of Chapter One are devoted to statistical methods and models for studying the dynamics in these processes.

The second chapter is fully intended to reveal in depth the peculiarities of the information provision of statistical studies of demographic processes in Bulgaria, and more specifically: population censuses and current demographic statistics.

The third chapter has a practical-applied orientation and concerns the testing of the considered statistical methodology for the analysis of the state, dynamics and regional differences in the main demographic processes. Special attention is paid to factor influences on demographic processes at the national and regional level.

The dissertation ends with a conclusion, in which the main results of the research conducted by the PhD student are briefly summarized.

4. *Literature* - the sources of information used by the PhD student (including Internet resources) related to the subject under consideration show the excellent awareness of Mrs. Markova and the in-depth critical view of a true researcher.

5. *Appendices* - in view of the brevity of the exposition and completeness of the content, the dissertation author has placed the primary data and part of the results of the intermediate calculations in a tabular format in the Appendices part.

II. Assessment of the form and content of the dissertation.

1. *Assessment of the relevance and development of research in the dissertation scientific problem;*

The dissertation examines in depth important issues related to the analysis of the main demographic processes in Bulgaria in a regional aspect.

2. *Opinion on the language, volume and instrumentation of the dissertation work;*

The dissertation student demonstrates in-depth knowledge of the literature related to the issue under consideration, excellent mastery of statistical tools related to the study of the essence of demographic processes, as well as excellent handling of specialized statistical software.

The scientific development is clearly structured, combining an optimal volume of the exposition and a balanced distribution of information in individual chapters, a clear and logically consistent statement, as well as a good argumentation of the scientific conclusions made.

3. *Opinion on how accurately and completely the abstract reflects the work.*

The abstract for the dissertation has a volume of 43 pages and includes: a general description of the dissertation, structure and content of the dissertation, a short but meaningful statement of the work, a declaration of originality, a reference to the main scientific contributions of the dissertation and a list of publications on the subject of labor.

The abstract is excellently prepared and correctly summarizes the content of the dissertation, as well as the scientific and scientific-applied results achieved by the dissertation student.

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

The contributions in the dissertation work are correctly presented in appendices from the dissertation list and reflect the scientific and applied work actually performed by him.

The main scientific and scientific-applied contributions to the development can be mentioned:

- The correct systematization of the essence of demographic processes and the concepts related to them.
- The clear systematization of a huge set of scientific publications on the topic of demographic processes and the definition of the main problem areas.
- Conducting an in-depth critical analysis of the issues of demographic processes and identifying the main factors that influence these processes.
- The adequate approbation of the methods discussed in the theoretical part for the analysis of trends and regional differences in birth rate, death rate and migration processes.
- The in-depth analysis of the results of the multifactorial regression models, assessing the influence of selected factors on the demographic processes - birth rate and death rate.

In addition to his dissertation, the author presented his research results in: 1 study, 3 articles and 1 report in Bulgarian.

IV. Dissertation questions.

Based on the dissertation work reviewed, I would like to make the following remarks to the author, which are in no way intended to detract from his work:

- For greater clarity in determining the authorship of Figure 1 and Figure 2 of Chapter One, it would be good to indicate their source.

Also, I would like to ask the following questions to the author of the thesis:

- According to the PhD student, to what extent does the official statistical information reflect the real external and internal migration flows in Bulgaria?

- From a statistical-analytical point of view, do the PhD student think that it would be better if the "Sofia-city" district was separated into a separate planning district outside the South-West one? If so, why?

- Does the PhD student think that it would be appropriate to apply ARIMA models for estimation and forecasting the time series considered in the dissertation?

V. Summary evaluation of the dissertation work and conclusion.

The dissertation work on the topic: "Statistical study of demographic processes in Bulgaria - regional aspects" represents a thorough scientific and scientific-applied study that presents the doctoral student as an accomplished researcher. The work was developed in accordance with the normative requirements for awarding the educational and scientific degree "doctor", reflected in the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its application.

In conclusion and in view of the quality of the proposed dissertation work, I confidently express my opinion "**in favor of**" awarding the educational and scientific degree "doctor" in the scientific specialty "Statistics and Demography" to Diana Ivanova Markova.

Date: 26/02/2024

Prepared by:

(assoc. prof. Al. Naydenov, PhD)