

SCIENTIFIC OPIGNION

BY PROF. D.SC. KIRIL ANGUELOV

(SCIENTIFIC SPECIALTIES: "ECONOMICS AND MANAGEMENT", "ORGANIZATION AND MANAGEMENT OUTSIDE THE SPHERE OF MATERIAL PRODUCTION" AND "PRODUCTION ORGANIZATION AND MANAGEMENT")

ON A DISSERTATION PAPER ON "**GAME MODELS AND TIME SERIES MODELING**", DEVELOPED BY **VLADISLAV KRASIMIROV TANOV** AT SOFIA UNIVERSITY "ST. KLIMENT OHRIDSKI, FACULTY OF ECONOMICS, DEPARTMENT OF STATISTICS AND ECONOMETRICS

FOR THE AWARD OF EDUCATIONAL AND SCIENTIFIC DEGREES "**DOCTOR**"

BY SCIENTIFIC FIELD 3.8. "**ECONOMY**"

DOCTORAL PROGRAM "**ANALYTICAL RESEARCH ON DATA /DATA SCIENCE/**"

1. General characteristics of the presented dissertation.

The dissertation has a total volume of 121 pages of main text, consisting of an introduction, three chapters, a conclusion, a list of the literature used. There is an appendix to the dissertation work, including figures related to the experiments carried out in chapter three. The content of the chapters is divided into separate paragraphs that end with a summary and the claimed contributions. The main text contains 16 tables and 3 figures. The list of used literary sources contains 88 titles in Bulgarian and English languages, with the main reference being to scientific sources such as monographs, studies, articles and books.

The research problem stems from the need to further develop the mathematical tools, based on the theory of games, applicable in solving specific tasks from economic practice. The dissertation focuses on solving several types of games, by finding equilibrium by solving Riccati equations. Thus defined, the aim of the dissertation work is the further development of an important and significant theory for science and economic practice.

2. General assessment of scientific and scientific-applied contributions

My overall familiarization with the dissertation and the candidate's abstract are

grounds for making the general conclusion that the dissertation submitted for defense contains scientific and applied results that relate to a contribution to the further development of Game Theory in solving certain types of games by searching for equilibrium by solving Riccati equations.

I accept essentially the contributions claimed in the dissertation as actually achieved, defining them as scientific-applied and applied.

3. Evaluation of dissertation publications

The doctoral student Vladislav Tanov is the author and co-author of six publications. Five of them are referenced and indexed by SCOPUS, and one is independent. The publications analyze various aspects of the topic studied in the dissertation. There is no difference between the way, the approach and the analysis that is done in the dissertation and in the presented research papers. Their number and direction fully satisfy the requirements for obtaining the educational and scientific degree "doctor". This gives me reason to assume that the dissertation work is an independent creative product realized by the doctoral student.

4. Evaluation of the autoref

The presented abstract, in Bulgarian and English languages, fully corresponds in terms of structure and content to the dissertation I evaluated. All its layout requirements are met and all necessary attributes are included. From the abstract, one can get a clear idea of what was done in the dissertation work.

5. Critical notes, recommendations and questions

Doctoral student Vladislav Tanov presents a dissertation in which professionalism stands out in solving the tasks set in the dissertation. This gives me reason to make specific recommendations, with the aim of deepening what has been achieved so far and the future scientific growth of the doctoral student:

1) I believe that the dissertation would benefit if the applications of the development were more clearly presented with more examples from business practice. Presented in this way, the examples will also be able to be characterized as

an applied contribution to the learning process.

2) I believe that the PhD student has the capacity to present the results of the dissertation in a separate monograph in English, which will be useful both for scientists in the field and for managers from business practice.

I have to declare that the mentioned notes and recommendations do not diminish the merits of the research, but represent a glimpse into the future development of the doctoral student.

6. Conclusion

The proposed dissertation work by Mr. **Vladislav Tanov** on the topic: "**Game models and modeling of time series**" is in accordance with the requirements for the acquisition of the educational and scientific degree "Doctor" of law, the Regulations for its application and the Regulations for the acquisition of scientific degrees at Sofia University "St. Kliment Ohridski". In the dissertation, I found original, up-to-date and significant scientific-applied and applied achievements that represent a contribution to the further development of Game Theory in solving certain types of games by searching for equilibrium by solving Riccati equations.

There are the necessary reasons to declare my positive assessment and I propose to the respected scientific jury to award the educational and scientific degree "DOCTOR" in the doctoral program "Analytical research on data /Data Science/", professional direction 3.8. "Economics" by Mr. Vladislav Tanov.

01 December 2023 r.
Sofia

Member of SJ:
(prof. D.SC. Kiril Anguelov)

