

REVIEW

**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. 114/04/04/2023 of the Rector of the University of
Agribusiness and Rural Development and the decision of the first meeting of the scientific jury
according to Protocol No. 1 of 04/06/2023 .*

Author of the dissertation: *Delyan Kostadinov Plachkov - full-time doctoral student in PhD
program in Finance and Banking at the Primary Unit - Department of Economics and
Finance and Receiving Structural Unit - Department of Economics and Management*

Dissertation topic: *"Risk management tools in the context of the Common
Agricultural Policy of the European Union"*

Research supervisor: *Prof. Dr. Ogniyana Stoichkova*

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 Implementation of the Law on the Development of the Academic Staff at the UARD.

2. Brief biographical data about the participant in the procedure

Doctoral student Dilyan Plachkov graduated from high school in "Peyo Yavorov" – in the city of Plovdiv. He holds the educational and qualification degrees of Bachelor of Business Administration and Master of Finance and Banking, graduating in 2018. From 2022, he is also a Bachelor of Theology at the Higher Evangelical Theological Institute.

In his career, the PhD student Plachkov held and holds various positions in business: as manager and assistant manager in Italy /2015-2017/; manager of commercial enterprises in Bulgaria /from 2013 until now/. Since November 2017, he has been appointed to UARD as a system administrator, and since February 2023 he has been part of the academic staff of UARD as an Assistant professor in the Department of Economics and Finance. He speaks English and Italian.

The broad professional training and interesting professional experience of doctoral student Plachkov make the "Finance and Banking" doctoral program as a logical continuation in his career development, thus he presents his professional potential and scientific interests.

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

3. General characteristics of the presented dissertation work

The peer-reviewed dissertation is 191 pages long and includes an introduction, three chapters, a conclusion, references and abbreviations used. The development contains 43 tables and 36 graphic images. The bibliographic reference in support of the exposure includes 118 sources, including 60 in Cyrillic and 58 in Latin.

Risk management is an inherent feature of a market economy. In the context of the policies implemented in the European Union, including the Common Agricultural Policy /CAP/ in conditions of a dynamic macroeconomic environment changing under the influence of non-economic factors of a systemic nature such as the war in Ukraine and the COVID-19 pandemic, the problem of the characteristics and applicability of financial instruments from the positions of the CAP is outlined. The presented dissertation work is dedicated to this ***extremely topical and relatively unexplored problem***. The doctoral student directs his attention to agriculture in our country and in particular to grain production, which is an important sector of crop production not only for Bulgaria, but also for other countries of Central and Eastern Europe/CEE/.

Structurally, the developed dissertation follows the academic community's conceptual scheme of this type of doctoral research /objectives-methodology-results/, which is the basis of 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 subject of the study is the management of market risk in grain production in the CEE countries before and during the military actions in Ukraine. ***The main objective of the research*** is to estimate and forecast based on empirical data the market risk of the main grain markets in CEE /and more precisely in Bulgaria, Croatia, Romania and Slovakia/ and thus to define the impact of the war in Ukraine on the producers of grain. ***The research thesis*** is that in the context of the EU CAP, the market risk in grain production can be assessed and forecasted using the "Value at risk" methodology.

In the first chapter, the main principles and goals of the EU CAP and the specifics of agriculture are examined in detail, a brief review of the development of the CAP was carried out, resulting in the outline of its main problematic restrictive aspects and guidelines for reforming with a view to achieving its goals. In this regard, financial instruments in the process of change and those for risk management are presented. The importance of financial instruments is argued. In the context of the comprehensive targeting of the future CAP, a complex of requirements is indicated, implying the making of specific decisions and representing challenges for farmers.

In the second chapter of the dissertation, the design of the research methodology and the empirical research itself is presented. It fully corresponds to the main goal and formulated research tasks. In a logical sequence, the approaches and diversity of the EU CAP toolkit for impacting agriculture are reviewed. The general organization of the market of agricultural products is analyzed as a complex of market measures within the framework of the CAP. Attention is paid to the second pillar of the CAP /Rural Development Policy/ - goals, financing mechanisms, priorities, and also to the financial instruments of the CAP in the EU for the development of agriculture and rural areas, co-financed by the European Structural Funds. Applicable ways to protect against risk in agriculture are outlined. The methodology

for measuring and evaluating the market risk in cereals is comprehensively outlined, representing a toolkit adapted for the purposes of the study.

Based on applied stochastic probabilistic models, *in the third chapter*, an assessment of the market risk for the period 07.11.2019 - 10.11.2022 of three cereals /bread and fodder wheat, barley/, as well as price indices of cereals in Bulgaria, Romania, Croatia and Slovakia. Based on the obtained results, recommendations are presented for the better application of financial instruments in the context of the CAP.

The dissertation work fits into the modern development of business management, expressed in focusing on risk management. The PhD student knows well the research methodology and follows it as a logic in the content, structure and execution of the aim, tasks and research thesis. The exposition is well illustrated with tables and many figures contributing to its understanding. The used sources concerning agricultural policy are as close as possible to the topic and give a sufficiently complete description of the researched problem for this branch. This defines the dissertation work as a current and significant research for society, with specific scientific and applied results, confirmed by the approval of a specific methodological a toolkit for identifying the problematic aspects, the features of financial instruments and the possibilities for their application in risk assessment in agriculture in Bulgaria, Romania, Slovakia and Croatia.

4. Evaluation of the obtained scientific and scientific-applied results

In *the Introduction*, the main problem is correctly formulated and the research tasks, scope, subject and methodology of the research, as well as 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 focus of the dissertation on the problems in the development of the CAP in the EU and in this regard the place of financial instruments, including and those for risk management. In the applied aspect, the goals, principles, specifics and scope of actions, organizational structures for conducting the CAP are characterized. In direct connection with the topic of the dissertation research, special attention is paid to market measures in the implementation of the CAP in the EU. A historical review of the reforms carried out since 1958 has been carried out in the aspects: target orientation; content characteristic; mechanisms including financial; effects. As a logical continuation, attention is focused on the development of financial instruments applied to risk management in agriculture in the course of phased reforms. Against the background of a review of the specific requirements for the 2021-2027 program period, the role of financial instruments is emphasized. Although problematic aspects have been outlined in the application of financial mechanisms as part of market measures – credits, micro-credits, equity capital or a combination of these forms of financing in CAP reform, these forms of financing are viewed too descriptively as a relatively new moment and as expanding the scope of market measures/pages 28-38/. Adhering to the aim and thesis of the dissertation, the doctoral student tries to highlight the approach of interrelationship between financial instruments applied in agriculture and risk management. In the first chapter of the dissertation, the emphasis is on regulations, both national and at the EU level, which has to a certain extent its general argumentation given the topic of the dissertation.

Second, the doctoral student carries out a detailed review and analysis of the applied CAP mechanisms: coverage of agricultural products /external and internal aspects/, competition rules, emergency measures. Special attention is given to rural development policy and its inherent market mechanisms. As specific instruments for the intervention of small agricultural holdings in the framework of the CAP application, various financings are specified. The specifics of the potential for the application of financial risk management instruments in the CAP are revealed by referring to European Commission reports and several existing methodologies. This part deals with those financial mechanisms that are applied and are mainly related to access to financing/various types of payments/. In addition, the PhD student focuses on market risk in agriculture. In this part of the development, however, he theoretically and practically connects the level of market risk with losses /p.59/ instead of with fluctuation /volatility of income due to various factors. This can be explained by the focus of the dissertation on applying risk metrics for the overall performance of the instrument, which measure a loss at a certain confidence interval. However, the content characteristic of the economic category "risk" and its specifics within the framework of the generally accepted components of risk management /factors, identification-types, measurement and evaluation, monitoring, measures/ *in agriculture* should be consistent, as it is the theoretical-methodological basis for the correct treatment of risk as a deviation of return from *the expected one*.

It is emphasized that risk management is "an important consideration for farmers" in planning and decision-making/p.60/. Along with this, when listing financing, financial instruments are also mentioned, inherent and widely applied as risk hedging techniques, including and the price one. The latter is indicated as constituting the market risk /page 66/, which raises the question of the decomposition of the market risk. In this part, the presentation would benefit from emphasizing that price changes are considered as the result of all risk factors, including and from those of force majeure in order to substantiate the claim of the need to assess market risk in order to guarantee financial viability and long-term sustainability, to make informed decisions, for effective risk management strategies./p.70/

Third, the market risk assessment includes 16 representative samples, each including 157 historical market price observations of bread wheat, barley and feed wheat, as well as the change in these market indices for price changes in Bulgaria, Romania, Croatia and Slovakia . Calculations are only for the indicators delta normal VaR and historical simulated VaR and only at 99% probability on a weekly and monthly basis for the 28 month period before and 7 months after the start of the war in Ukraine. The risk measures adopted for the calculation are appropriate because the calculations of delta normal VaR and historical simulated VaR make it possible to highlight the difference between the maximum expected loss under normal conditions and the maximum possible loss within a confidence factor / whether the distribution of variables has distortions such as kurtosis or asymmetry/ ie historical simulated VaR can serve as a basis for comparison and forecasting of probabilistic changes in value at risk. Without disputing the applied risk metrics, it should be pointed out that in the context of adopting indicators for financial markets, with which commodity market investors can align their investment strategies and given the generally accepted approach in economic modeling, the application only needs additional justification of the classical formula for value at risk and of historically simulated VaR from the "family" of indicators from the rapidly developing concept of value at risk /p.71/ in order to define the limitations of their use and effectiveness.

The analysis of the indicators calculated on the basis of empirical data shows that the military conflict in Ukraine affects to an unequal extent and in different directions in terms of

market risk in the grain sector of the analyzed countries: its influence is greatest on feed wheat prices in Romania , reducing market risk by 13.37% on a weekly basis and 28.14% on a monthly basis; the highest price risk is in Croatia on the barley markets - with the observed increase amounting to 5.60% on a weekly basis and 11.78% on a monthly basis. The dynamics of the losses reflect a change in the fundamental value of the output due to various risk factors, and the dissertation cites the war in Ukraine as such a factor. However, due to the scope of the study, the risk impacts defining the divergent price changes were not tracked more factorially.

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.

Given the principles of the new EU CAP, the doctoral student formulates recommendations regarding the different schemes that make up the risk management schemes and other actions aimed at better interrelationship of the various financial instruments with a view to achieving the objectives of risk management.

5. Evaluation of the abstract for the dissertation work

Представеният на български език автореферат е в обем от 48 страници и отразява коректно съдържанието на дисертационния труд. Той пълно и обективно възпроизвежда в синтезиран вид съдържателната структура, необходимата информация, основните изводи и изследователските резултати в дисертационния труд, в него синтезирано са изложени справка за приносни моменти, публикации по въпросите на дисертацията, декларация за оригиналност и като такъв отговаря на изискванията.

The abstract presented in Bulgarian is 48 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.

6. Evaluation of the contributions of the dissertation work (scientific, scientific-applied)

The content of the research results logically substantiates the theoretical-methodological and practical-applied content of the dissertation work. Through research that can be called "pilot" the real applicability of the risk modeling concept is proven by means of specific risk meters in the field of agriculture and in particular the market risk in cereals. This is also confirmed by the following contributions of a theoretical-methodological and applied-analytical nature.

First, the conceptual framework of the Common Agricultural Policy of the European Union is supplemented and the impact of this policy's interventions on the agricultural sector and rural development is outlined. The retrospective examination of the development of the CAP in the EU also deserves attention. Attention has been paid to the various types of financial instruments for risk management, and in particular to market risk in the agricultural sector, and from the standpoint of the systemic approach, an attempt has been made to define it in its entirety and by components.

Second, with a pronounced methodological character, is the application of a methodological toolkit, applied primarily, but not only, in the management of investment portfolios in financial institutions for researching the market risk of grain producers. The

specific features in assessing and forecasting the market risk for three cereals: bread wheat, fodder wheat and barley, quoted on the markets in Central and Eastern Europe (Bulgaria, Romania, Croatia and Slovakia) and also on price indices for cereals have been established.

Third, the detailed presentation and analysis at an empirical level of market risk for the entire period under study, as well as for the periods before and during the war in Ukraine, are supported by logical conclusions and announcements. The market risk for grain producers in CEE (in particular Bulgaria, Croatia, Romania and Slovakia) is estimated and forecast at 99% probability for a period of 7 and 30 days in a 28-month period before and 7 months after the start of the war in Ukraine by using the risk measures Delta Normal VaR and Historical Simulated VaR.

Fourth, it is empirically proven that the military conflict in Ukraine affects the market risk in the grain sector of the analyzed countries to a different degree and in a different direction. The military conflict is found to have the greatest impact on the feed wheat market in Romania in the direction of reducing market risk. The highest levels of increase in market risk due to the military actions in Ukraine were calculated in the barley markets in Croatia.

Fifth, recommendations are formulated regarding the risk management schemes in the Rural Development Programs, oriented towards market risk management, emphasizing the need to develop a toolkit of financial instruments that takes into account the latest trends and priorities /" greening', 'simplifying' and modernizing the CAP, as well as promoting the application of innovation and digital technologies, improving awareness and increasing motivation among all stakeholders, creating and sharing new knowledge and building capacity to implement and develop financial EU CAP instruments.

7. Evaluation of the publications related to the dissertation work

The 3 scientific publications deposited under the protection procedure – one scientific article in an academic publication and 2 scientific reports in Proceedings of International Scientific Conferences are an integral part of the doctoral student's research work in the context of the doctoral thesis. They ensure the necessary publicity of the research results before the academic collegium and interested parties in practice. Publications meet the requirements for independent and bona fide author scientific research.

8. Critical notes and recommendations

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 at the corporate level in the development of a specific strategy, in trainings and in the design of modern models for risk management in agriculture, the research results of the models approved in the dissertation work.
- To expand in the future his research in the field of economic modeling of the risk of commodity markets, including and through the VaR concept.

Conclusion:

My opinion is that the main goal of the dissertation research has been achieved, and the tasks set have been fulfilled with the appropriate methodology and research approaches. A sufficient information has been used, which has been analyzed with an adequate toolkit, and recommendations have been made for management practice in agriculture. 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 the Law for development of the academic staff in the Republic of Bulgaria for the acquisition of the Educational and Scientific degree "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 offer to the honorable members of the Scientific Jury on the basis of Chapter Two, Art. 6 of the Law for development of the academic staff in the Republic of Bulgaria **to support the awarding of the educational and scientific degree "doctor" to Delyan Kostadinov Plachkov**, a doctoral student in the "Finance and Banking" doctoral program in professional field 3.8. Economics, scientific field "Social, economic and legal sciences".

02.05.2023



.....
Prof. Ivanka Daneva, PhD