

A methodological approach to grain market research in Bulgaria

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Abstract

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The grain market is a complex economic system that is affected in climate factors, government regulation, the effectiveness of the institutions, the availability of appropriate infrastructure, the intensity of competition of economic entities, etc. The countries of the Black Sea region, to which Bulgaria belongs, are among the main participants of the world grain market, providing a total of nearly 1/3 of the world market export. The war in Ukraine from 2022, reflect a destabilization of the global grain market and reinforce the legitimate concerns of experts about global food security. The international situation affects the stability of the grain market in countries such as Bulgaria, which are significantly affected by the crisis.

The purpose of this report is to present a methodological framework for studying the stability of the grain market in Bulgaria. In the context of the presented methodological approach, market stability is considered as a key measure of food security, along with grain availability, access and utilization. A stable market implies predictability in terms of price changes and basic parameters such as demand, supply and quality of the produced output. In addition, the predictability of the market and the possibility of forecasting its basic parameters should be evaluated from the positions of all participants in the market system.

Keywords: food security; food stability; grain market

Introduction

The Black Sea region stands out as one of the most dynamically developing areas in the global economy. This region possesses a unique characteristic where the strategies of major countries are focused on controlling small but strategically crucial geographical locations that significantly impact global trade and communications (Vassilev, Zlatev, 2019). Spanning from Romania and Bulgaria through northern Turkey and reaching Georgia, the Black Sea region covers approximately 0.3% of the EU territory (European Commission, 2010). It comprises countries with direct access to the Black Sea, including Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine, as well as those with substantial historical and geographical influence, even

in the absence of direct access, such as Greece, Armenia, Moldova, and Azerbaijan (Dimitrova et al., 2017).

The ongoing Russian-Ukrainian crisis presents considerable global and regional challenges to food security. Russia's invasion of Ukraine has caused displacement of millions and disrupted agricultural production and trade in one of the world's primary export regions. The ramifications on global food markets, both directly and indirectly through fertilizers and energy, are unparalleled in at least the last half-century. In the realm of Black Sea grain exports, Russia and Ukraine play pivotal roles, accounting for 16.5% and 9.5% of global exports, respectively (Kovtoniuk, Molchanova, 2022).

The production and export potential of key participants from the Black Sea region is visually depicted in Figure 1.

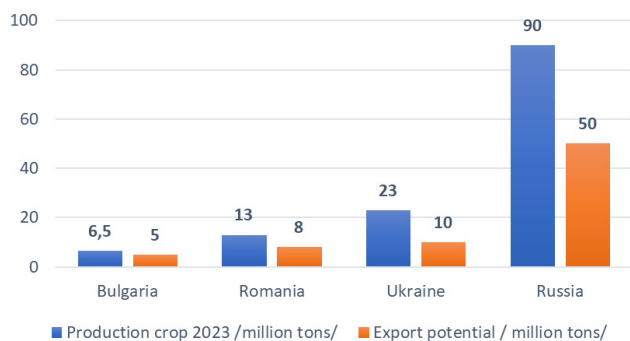


Fig. 1. Production and Export Potential of Black Sea Region Countries (FAO, 2022)

Source: FAO <https://www.fao.org/3/cb9013en/cb9013en.pdf>

Global food markets have witnessed a significant surge in prices following Russia's invasion of Ukraine. The Food and Agriculture Organization's (FAO) Food Price Index (FFPI) reached a record high in March 2022 since its inception in 1990, with an average of 159.3 points, representing a 12.6% increase over February 2022 (FAO, 2022). This mounting uncertainty, mirrored by and contributing to increased price volatility in internationally traded commodities, significantly affects production and marketing decisions while stimulating speculative market behavior. These price fluctuations present challenges for farmers in making decisions regarding crop selection and trade volume, as well as making business organizations more cautious about investing in agriculture.

Over the past decade, several factors have influenced wheat, maize, and barley production in the Black Sea region. These include the availability of labor resources, the level of investment, access to natural resources, climatic conditions, entrepreneurial capabilities of the local population, information exchange, technological advancements, product quality, government subsidies, local agricultural policies in individual countries, unforeseen factors related to the emergence of pandemics and armed conflicts, and increased commodity prices such as fertilizers and natural gas.

Data from the International Labour Organization (ILO, 2022) shows a decline in the relative share of people employed in agriculture across almost all Black Sea region countries, with Bulgaria being an exception, experiencing a slight increase in this share from 2012 to 2019 (an increase of 0.18 percentage points). In contrast, Russia saw a decline of approximately 1.5 percentage points, Ukraine a decrease of 6 percentage points, and Romania a reduction of nearly 8.5 percentage points during the same period. This

phenomenon highlights the significance of agriculture for the economy of Bulgaria.

The importance of soil and climatic conditions for grain cultivation in the region cannot be overstated (Sidorenko et al., 2021). The climatic factor is closely associated with the climatic zones encompassing the region, primarily characterized by climate and water resource availability. The majority of the Black Sea region falls within a temperate climatic zone, particularly favorable for cereal crops, with a specific emphasis on wheat. The region's favorable natural conditions are the cornerstone for achieving reduced production costs, providing a competitive edge in terms of pricing.

The volume of investments in grain production is considered a significant factor positively impacting grain production (Luchian, V, 2022). Equally crucial are the entrepreneurial opportunities within grain production and specialized knowledge in agricultural technologies, as emphasized by researchers.

Furthermore, the level of technological development and the adoption of precision production practices are vital for cereal crop production (Thompson et al., 2019).

Additionally, customs policies and import/export procedures for grain, inventories, transitional reserves, and subsidies for grain production and trade play significant roles in shaping the competitiveness of the grain market (Luchian, V, 2022). Notably, in the Black Sea region, subsidies are exclusively directed toward production, as opposed to grain trade. In contrast, in the United States, simultaneous subsidies for both production and trade have led to an interesting disruption in the supply chain, favoring product overproduction. Given the relatively short shelf life of grain, this has resulted in considerable losses for producers or pushed them to sell their products at reduced prices at the last minute.

Factors determining the competitiveness of the grain market also hinge on the attractiveness of grain markets for transnational companies engaged in grain trade, inflation-adjusted transport infrastructure, credit risks, interest rates, and insurance coverage (Kovtoniuk, K., and E. Molchanova, 2022).

Monitoring trends in the dynamics of demand, supply, exports, and grain prices, both locally in the Black Sea region and on a global scale, is insufficient for drawing well-founded conclusions regarding market stability. The presented information underscores the specific need for developing a methodological framework to analyze grain market stability in the respective countries. The methodology developed in this research is tailored for Bulgaria but can be adapted for the analysis and assessment of market stability in other Black Sea region countries.

Material and Methods

In the context of the proposed methodological approach, market stability is considered a fundamental component of food security, alongside the availability, access, and utilization of grain (FAO, 2008). Market stability in the grain sector is intricately linked to the availability, access, and utilization of grain products. The grain market is regarded

as a complex economic system influenced significantly by various factors, including climatic conditions, government regulations, institutional efficiency, infrastructure availability, the intensity of competition among economic players, and more.

In international trade, a “stable market” is typically defined as a market capable of handling a high volume of transactions without causing significant price fluctuations

Table 1. Methodological framework for assessing the grain market competitiveness

Areas		1	2	3	4	5	
Barriers to entry into the industry							
Economies of scale	small						large
Differentiation of Offers by Individual Producers	weak						strong
Capital Requirements for Entry into the Industry (including agricultural land)	low						tall
Access to Raw Materials and Inputs	free						limited
Access to Channels for Product Marketing	free						limited
Government Restrictions on Entry into the Industry	missing						strong
Effect of firms' experience on industry success	weak						strong
Reactions of industry competitors	slow						fast
Barriers to exiting the industry							
Asset specialization	high						low
One-time exit costs	tall						low
Internal strategic relationships (e.g. commitments made; contracts signed, etc.)	strong						weak
Government restrictions on exit from the industry	tall						low
Competition in the Industry							
Number of Competing Firms	big						small
Industry growth	slow						quick
Fixed costs	tall						low
Investments in the industry	small						large
Horizontal partnerships in the industry (between grain producers themselves)	missing						strong
Power of customers (processors/traders) in the industry							
Number of significant customers	small						big
Costs to customers when diverted to another manufacturer/retailer	low						tall
Customer input on product quality	big						small
Customer profitability	low						high
Power of suppliers in the industry							
Total Number of Suppliers	small						big
Number of significant suppliers	big						small
Costs of Switching to Other Suppliers	tall						low
Probability of Backward Integration into Suppliers	small						big
Suppliers' Contribution to Quality	big						small
Share of supplies in total costs	big						small
Attitude of state institutions and municipal authorities towards the industry							
Protectionism towards the industry	short						tall
State regulation of the industry	strong						weak
Consistency of the state's policy towards the industry	consistent						inconsistent
Availability of restrictions regarding partnership with competitors in the industry	there are limitations						without limitations

Source: own work

(García-Díez et al. 2021). In essence, the focus is primarily on “price stability” as a component of a “stable market.” Price stability implies predictability not only in terms of price changes but also regarding other market parameters, including demand, supply, and product quality (Issing, O., 2000).

Moreover, market predictability and the ability to forecast its fundamental parameters should be assessed from the perspective of all market participants, including agricultural landowners, grain producers, input suppliers, storage facilities, transnational grain trading companies, and service companies involved in transportation and logistics (Kostadinov and Mollov, 2015).

A stable market implies predictability concerning changes in price and fundamental parameters, such as demand, supply, and product quality. Furthermore, market predictability and the ability to forecast its fundamental parameters should be assessed from the perspectives of all participants in the market system.

After presenting key concepts and definitions of a stable grain market and the factors that determine it, a methodological framework can be proposed in the following steps:

First. Assess competition within the grain production industry, including evaluating barriers to entry and exit, supplier and buyer power, and the stance of government institutions.

Second. Examine the impact of key macro-environmental factors on grain market stability.

Third. Conduct a comprehensive assessment of grain market stability, presenting various scenarios for the development of the grain market in the region.

The research methodology relies on both primary and secondary data and employs the following instruments:

A checklist for evaluating competitiveness in the grain production industry, based on Michael Porter’s methodology, which emphasizes the role of national and regional conditions in achieving competitive advantage (Porter, 2004; Stanimirov and Stanimirova, 2013).

An online survey involving representatives from various segments of the grain market system.

The first part of the methodology (competitiveness assessment) involves analyzing the current state and forecasting future developments within the industry. The main areas of competition analysis encompass barriers to entry and exit, rivalry within the industry, power of customers and suppliers, and the role of state institutions (Table 1).

The second part of the methodology (analyzing the impact of key macro-environmental factors) is based on a model presented in Figure 2. The study involves experts from various target groups who possess in-depth knowledge of the grain market as a system, including experts from government and municipal administration in agriculture, large grain producers, representatives from trade, logistics, and supply businesses, and international partners.

As per the presented models, this research allows for an exploration of the contribution of grain market security to grain market stability and its relationship with the other three components of food security: availability, access, and utilization.

The comprehensive analyses, based on the two provided steps (sector competitiveness analysis and investigation of influencing factors), will enable the presentation of various

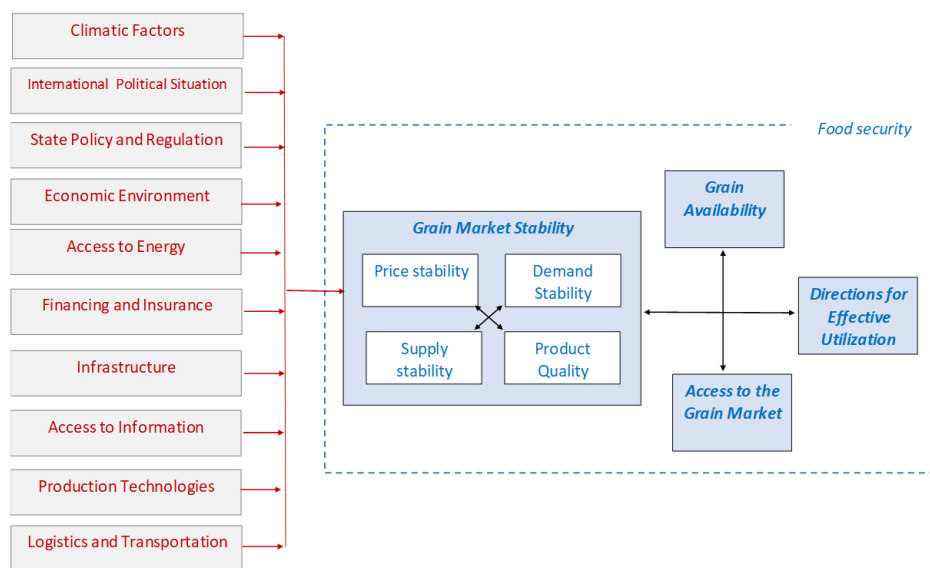


Fig. 2. Model for Analyzing and Assessing Grain Market Stability

Source: own work

scenarios for the development of the grain market. These scenarios may include:

Baseline Scenario: Based on current trends and policies in the grain market, using secondary statistical data for production, consumption, and trade.

Optimistic Scenario: Assumes favorable conditions, such as improved technology, international cooperation, and supportive policies, leading to enhanced grain market stability and food security outcomes.

Pessimistic Scenario: Considers adverse events, such as climate change-induced disruptions or geopolitical conflicts, negatively impacting the grain market and food security.

Policy-Based Scenarios: Examines different policy interventions, such as increased investment in agriculture, trade liberalization, or changes in food security policies, and assesses their potential effects on market stability and food security.

Conclusion

The Russian-Ukrainian crisis has created unprecedented global and regional food security challenges. Russia's invasion of Ukraine disrupted agricultural production and trade, leading to soaring global food prices. This volatility hampers production and marketing decisions, affecting farmers and firms alike. To assess grain market stability comprehensively, it is essential to consider predictability, aligning with FAO-defined food security.

Primary and secondary data collection methods, including competitiveness assessment and online surveys, will provide valuable insights. The research will explore food security's role in market stability and analyze scenarios for grain market development, offering crucial insights for informed policymaking.

This research methodology combines primary and secondary data and employs research instruments for evaluating competitiveness in the grain production industry. It encompasses the opinions of representatives from various segments of the grain market system.

The first part of the methodology involves analyzing the current state within the industry and forecasting future developments, covering areas such as barriers to entry and exit, rivalry within the industry, power of customers and suppliers, and the role of state institutions.

The second part of the methodology relies on a presented model and involves experts from various target groups who possess in-depth knowledge of the grain market as a system, including government and municipal administration experts in agriculture, large grain producers, repre-

sentatives from trade, logistics, and supply businesses, and international partners.

Through this approach, the research explores the contribution of food security to food market stability and its relationship with the other components of food security, namely availability, access, and utilization. The comprehensive analyses will provide insights into various scenarios for the development of the grain market, including baseline, optimistic, pessimistic, and policy-based scenarios, enabling a more informed understanding of the market's dynamics and potential impacts on food security.

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