

UNIVERSITY OF ECONOMICS – VARNA  
FACULTY OF MANAGEMENT  
DEPARTMENT OF AGRARIAN ECONOMICS

**Desislava Stefanova Ivanova**

**THE GRAIN MARKET IN THE BLACK SEA REGION**

**Abstract**

of the dissertation for obtaining the educational and scientific degree "Doctor"  
Professional field 3.8. Economics  
Doctoral program: Agrarian Business

**Scientific supervisor:**

Assoc. Prof. Mariya Radoslavova Stanimirova, PhD

**SCIENTIFIC JURY:**

Prof. Dr. Teodorina Zhelyazkova Turlakova	UE Varna
Prof. D.Sc. (Economics) Yulia Markova Doychinova	UNWE Sofia
Prof. D.Sc. Plamena Georgieva Yovchevska	IAE-BAS, Sofia
Prof. Dr. Marina Angelova Nikolova	TAE– Svishtov
Assoc. Prof. Dr. Gergana Georgieva Slavova-Stefanova	UE Varna

**ALTERNATE MEMBERS:**

(internal) Assoc. Prof. Dr. Tanya Nikolova Georgieva	UE Varna
(external) Prof. Dr. Zornitsa Dimova Stoyanova	UNWE Sofia

**REVIEWERS:**

Prof. Dr. Teodorina Zhelyazkova Turlakova	UE Varna
Prof. D.Sc. Plamena Georgieva Yovchevska	IAE-BAS, Sofia

Varna, 2025

The dissertation consists of 207 pages, including: a list of abbreviations (1 page), a list of figures (2 pages), a list of tables (1 page), an introduction (6 pages), the main body structured in three chapters (164 pages), conclusion (4 pages), and a references section (12 pages). The main text contains 19 tables and 36 figures. The reference list includes 146 sources, among which 122 printed publications and 24 internet sources.

The defense of the dissertation will take place on 20.02.2026 at 15:00 h. in hall 205 of the University of Economics – Varna at a meeting of the scientific jury appointed by Order № RD 06-192, Varna, 05 December 2025 of the Rector of UE – Varna.

## **I. GENERAL CHARACTERISTICS OF THE DISSERTATION WORK**

### **1. Relevance and significance of the research problem**

The grain sector occupies a leading place in the structure of Bulgarian agriculture, both from the point of view of production volumes and due to its significant contribution to the national export. Crops such as wheat, maize and barley are traditionally cultivated on a large part of the arable land in the country and play a key role in guaranteeing food security. At the same time, the market realization of Bulgarian grain production is carried out under conditions of intensified competition, especially within the Black Sea region, where countries such as Romania, Ukraine and Russia occupy strategic positions. This reinforces the necessity for a comprehensive study of the functioning of the grain market, as well as for an assessment of its sustainability in the context of regional and global market dynamics.

At the beginning of the 21st century, resource markets, to which the market of grain crops belongs, are characterized by pronounced price volatility and increasing activity, which exert a complex influence upon the social, economic, technological and environmental dynamics of the global economy. The price fluctuations, initially arising from imbalances in the financial sector, gradually transfer to the real economy. Price instability in this context is outlined as a critical factor influencing the security of food systems, specifically in the case of grain crops. The examination of these dynamics — both at the national and at the international level — is of essential significance for revealing the interrelations between the markets and for forecasting long-term tendencies.

The relevance of the topic is conditioned, on the one hand, by the leading significance of wheat and maize as basic agricultural crops produced in Bulgaria, which are directly connected with guaranteeing food security. On the other hand, grain production possesses strategic economic importance for the Black Sea region, forming one of the key directions in agrarian trade and in the international competitiveness of the respective states.

## **2. Subject and object of the research**

**The subject** of the research comprises the factors that exert influence on the stability of the grain market, the processes occurring within the framework of the market system, as well as the resulting socio-economic effects for the region and, in particular, for Bulgaria.

**The object** of the research is the market of grain crops in Bulgaria and in the countries of the Black Sea region.

## **3. Aim and tasks of the research**

**The aim of the dissertation work** is, on the basis of an analysis of the theoretical-methodological foundations and of an examination of the tendencies, the competitive environment and the attitudes of the key participants, to evaluate the stability of the grain market in the countries of the Black Sea region, with an emphasis on Bulgaria, and to formulate strategic guidelines for its development under conditions of international trade.

In the implementation of the stated aim, the dissertation formulates the following main **tasks**, sequentially realized in each of the chapters of the research:

1. To analyze theoretical concepts, approaches and models for the study of the grain market as an economic system.
2. To develop a methodological framework for the study of the stability and competitiveness of the grain market.

3. To analyze the trends and specificities in the development of the market of grain crops in the countries of the Black Sea region, with an emphasis on Bulgaria, highlighting the factors influencing its sustainability and competitiveness.

4. To analyze the competitive environment of the market of grain crops in Bulgaria and in the Black Sea region.

5. To examine the attitudes and perceptions of the key participants in the grain market in Bulgaria regarding the factors of stability, competitive advantages and constraints in the sector.

6. To formulate strategic guidelines for the development of the market of grain crops in Bulgaria, aligned with the identified challenges and opportunities at national, regional and international level.

#### **4. Main thesis and hypotheses**

**The main research thesis** is that the market of grain crops constitutes a strategic system for the economic and social development of the Black Sea region and of Bulgaria. Its functioning is determined by the totality of geopolitical, climatic, infrastructural, technological and institutional factors, whose understanding and management are critically important for guaranteeing food security and the sustainability of the sector. The development of strategic guidelines and scenarios for development, based on an analysis of trends, the competitive environment and the attitudes of market participants, is a necessary condition for strengthening competitiveness and for the adaptation of the sector.

**Two hypotheses** are formulated, which are tested in the course of the research:

**Hypothesis 1.** The stability of the market of grain crops in Bulgaria and in the Black Sea region is low due to the dominant influence of external geopolitical and climatic factors, and sustainability can be achieved only through purposeful national and regional strategies for adaptation and modernization.

**Hypothesis 2.** The enhancement of the competitiveness of grain production in Bulgaria depends to the greatest extent on internal factors — technological modernization, digitalization, cooperation and effective institutional support — which can limit the vulnerability of the sector to external impacts and ensure sustainable development.

## **5. Limitations in the development of the dissertation work**

The research has been conducted under certain limiting conditions, which arise both from the specificity of the topic and from the necessity to focus on the most essential aspects of the problematics. The scope of the dissertation encompasses the key participants from the countries forming the Black Sea region — Bulgaria, Romania, Ukraine and Russia. Despite the emphasis on these four economies, the analysis is situated in the context of the global grain market, given the fact that the market in the Black Sea region functions in close connection with the international trade and price environment and cannot be examined in isolation.

With regard to the researched crops, the dissertation work concentrates on three main grain crops — wheat, maize and barley (with a primary focus on wheat), which have a leading role in agricultural production and in the trade exchange of the examined states. The research covers the period after 2010, while preceding events and processes are included for the purpose of argumentation of the current tendencies. Due to objective limitations, the analysis incorporates only the most essential economic, political, social and natural-climatic factors that hold leading significance for market stability in the researched region

## **6. Information provision**

The information provision of the dissertation work is based on a methodological framework constructed from a set of approaches, methods and

analytical models, which ensure the systematic collection, processing and interpretation of primary and secondary data related to the stability of the market of grain crops in the countries of the Black Sea region.

From a methodological perspective, the systemic and process approaches are applied, which allow the market to be examined as a complex economic system and as a sequence of interconnected processes. Comparative and factor analysis, synthesis, systematization and generalization have been employed

## **II. STRUCTURE AND CONTENT OF THE DISSERTATION WORK**

The dissertation work is structured into an introduction, three chapters, a conclusion and a references section, which reflect the logical sequence of its content.

### **CONTENT**

#### **INTRODUCTION**

#### **CHAPTER ONE. THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF THE GRAIN MARKET**

- 1.1. Economic characteristics, structure and influencing factors of the grain market
- 1.2. Approaches, models and indicators for the assessment of market stability
- 1.3. Methodological framework for the study of the stability of the grain market

#### **CHAPTER TWO. STUDY OF THE GRAIN MARKET IN THE COUNTRIES OF THE BLACK SEA REGION**

- 2.1. The strategic significance of the Black Sea region in international trade of grain crops
- 2.2. National profiles of the grain market in the Black Sea region
- 2.3. Factors determining the sustainability of grain production, price dynamics and market stability

## **CHAPTER THREE. OPPORTUNITIES FOR STIMULATING THE STABILITY AND DEVELOPMENT OF THE GRAIN MARKET UNDER CONDITIONS OF INTERNATIONAL TRADE**

- 3.1. Competitive environment of the grain market: status and expectations
- 3.2. Attitudes and perceptions of the participants in the grain market regarding sector stability
- 3.3. Strategic guidelines for the development of the grain market

## **CONCLUSION**

## **REFERENCES**

### **III. MAIN CONTENT OF THE DISSERTATION WORK**

#### **CHAPTER ONE. THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF THE GRAIN MARKET**

In paragraph 1.1 of Chapter One, “Economic characteristics, structure and influencing factors of the grain market”, the role and significance of the agricultural market, as well as the specific features of the grain market, are examined. Emphasis is placed on its position in ensuring food security, social stability and sustainable development. It is indicated that the grain market has strategic significance as a primary food and industrial resource with wide applications in the food, feed and energy industries.

The main characteristics of agricultural markets, which distinguish them from other market structures, are discussed — the high dependence on natural and climatic factors, seasonality and fluctuations in yields, manifestations of imperfect competition and government intervention, as well as the social sensitivity of the sector. The role of competition as a regulatory mechanism is analyzed, which encourages efficient allocation of resources, productivity improvement and the implementation of innovations. The influence of the European Union’s Common

Agricultural Policy is examined, through which price and income stabilization in the sector is ensured via direct payments, subsidies and intervention mechanisms.

In the context of globalization, it is emphasized that agricultural markets acquire a transnational character, as prices are determined not only by domestic supply and demand, but also by international exchange quotations, trade policies, logistical capabilities and geopolitical processes. The growing interconnection between the agricultural market and other economic systems — finance, energy and ecology — is noted, which affects the production cost and the structure of demand.

The structure of the grain market is examined, including producers, traders, processors, transport and logistics operators, as well as control and certification institutions. The main mechanisms of market realization are presented — direct contracts, public tenders, exchange and futures trading. The role of commodity exchanges is analyzed as highly organized and regulated markets, providing transparency in price formation and opportunities for managing price risks. Attention is also paid to the influence of currency markets on the price competitiveness of grain producers and exporters.

The concept of the grain supply chain is presented, involving the main participants — landowners, raw material suppliers, producers, storage operators, processors, traders, and market and service structures. Their interconnections and significance for the efficiency and sustainability of the sector are traced.

The main factors influencing the coordination and stability of the market are summarized — the degree of state regulation and subsidization, the condition of infrastructure, the form of land ownership, market concentration, as well as the impact of climate change, geopolitical conflicts, and global crises. The necessity of improving regulatory mechanisms and developing sustainable policies aimed at minimizing risks and enhancing the competitiveness of the grain market is emphasized

In paragraph 1.2, “**Approaches, models and indicators for the assessment of market stability**”, the methodological foundations for the study of the grain market as a dynamic and complex system are presented. The necessity of a systemic approach is substantiated, which simultaneously encompasses macroeconomic influences and the internal organization of the market (Kostadinov, 2014), as well as typologization by levels — local, national, regional and global — with different analytical tools for each. A classification of approaches is proposed according to the time horizon (retrospective/forecast), territorial scope (national/regional/global), level of observation (macro/meso/micro) and subject focus (demand, supply, prices, institutional environment, structure).

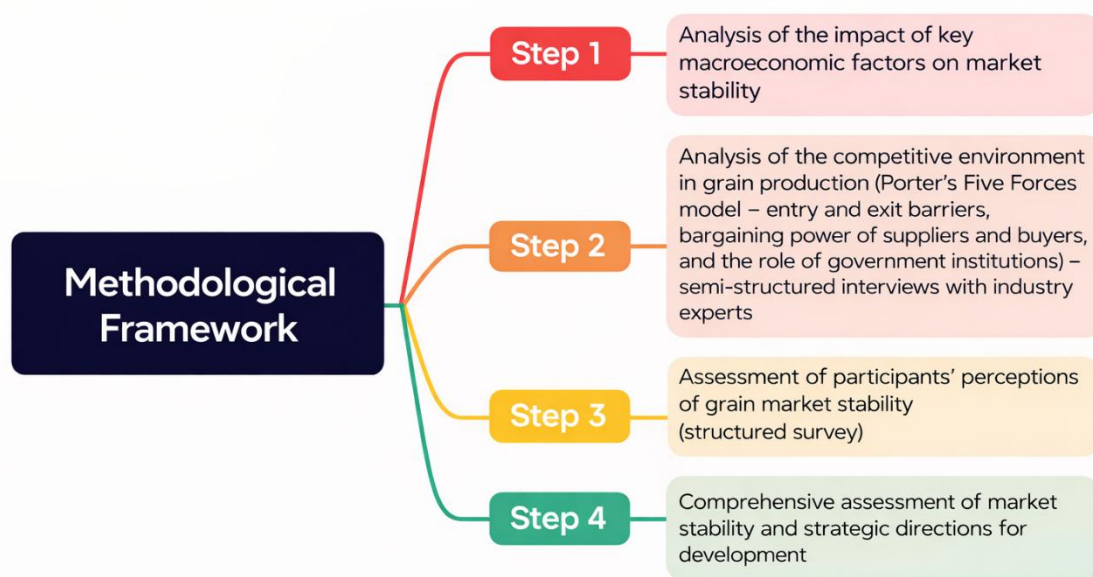
At the macro level, PESTEL analysis and Porter’s Five Forces model are outlined for diagnosing the competitive environment in grain production. Conceptual emphases on competitiveness and productivity are presented (Porter, 1980; 1985; Porter & Ketels, 2003; Krugman, 1990; Camagni, 2002). Key determinants of stability are identified: climate change, demographic trends, energy use of grain, attractiveness for TNCs, infrastructure, institutional framework and regulatory efficiency; at the micro level — access to financing and insurance, degree of integration and cooperation, managerial capacity and innovations. Priority directions are highlighted, including the improvement of regulatory frameworks and equality of market participants, modernization and e-logistics, export expansion, and stimulation of investments through credit and insurance instruments.

The relationship between market stability and food security is examined: the four dimensions availability, access, utilization, stability are defined (WFS, 2006), as well as the risks of mismatch between demand and supply (FAO, 2023) and post-crisis price volatility (Taslim, 2014). External shocks and geopolitical events affecting supply chains and food security are indicated (Kovtoniuk & Molchanova, 2022). In this context, a stable market is characterized by relatively constant price

levels, sustainable transaction volumes and predictable dynamics (Issing, 2002), evaluated from the perspective of all participants in the chain (Kostadinov & Molloy, 2015)

A set of indicators for assessment has been formulated: price indicators (level, volatility, predictability), production indicators (volumes, yields, buffer stocks), access-related indicators (physical and economic access, logistical connectivity), quality indicators (compliance with standards for domestic market and export), institutional and infrastructural indicators (regulatory efficiency, storage and transport capacities, transparency of information). By combining these groups, the study operationalizes market stability as a state of predictability of prices, availability and trade flows in the national and regional (Black Sea) context.

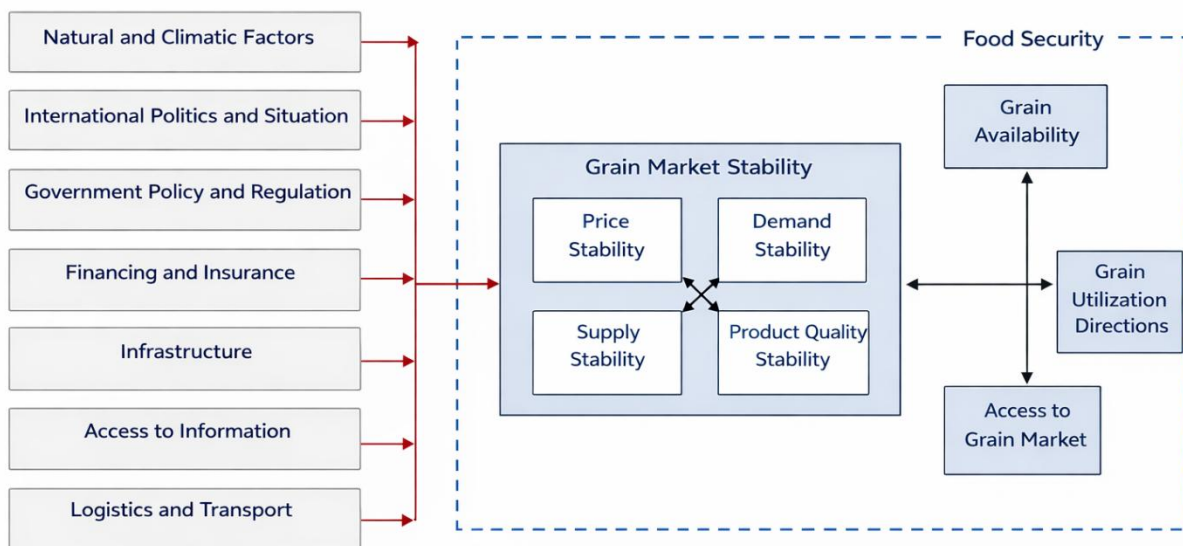
In paragraph 1.3, “Methodological framework for the study of the stability of the grain market”, a systematic four-step approach is developed, which integrates external factors and internal market mechanisms into an analytically applicable scheme (see Fig. 1).



**Figure 1: Methodological framework for the study of grain market stability**

The presented framework includes: (1) analysis of the impact of key macroeconomic and institutional factors; (2) assessment of the competitive environment in the *Grain Production* sector (entry/exit barriers, market power of suppliers and buyers, role of institutions); (3) examination of the attitudes of grain producers and traders regarding market stability; (4) comprehensive evaluation and formulation of strategic development opportunities.

The first step applies a structured assessment of the macroenvironment through a combination of secondary statistical data and primary empirical results from a survey of representatives of state and municipal administration, large producers, trading and logistics operators, and international partners. The methodology is visualized in Figure 2, positioning the market as an open system dependent on exogenous and endogenous determinants.



**Figure 2: Methodology for the analysis of factors influencing the stability of the grain market**

The factors are systematized into seven thematic groups: (1) natural and climatic conditions; (2) international policy and economic environment; (3) state

policy and regulatory mechanisms; (4) financing and insurance; (5) infrastructure; (6) access to information; (7) logistics and transport.

The second step assesses the competitive environment through Porter's model, adapted to the agricultural context. The analysis covers entry and exit barriers, intensity of rivalry, market power along the chain (suppliers – producers – clients) and the institutional context (central and local authorities). A scale for systematic measurement by areas was used (adapted from Stanimirov & Stanimirova, 2013), which ensures comparability and validity of the conclusions regarding the structural dynamics of the sector.

The third step includes a survey of the main participants in the market: grain producers, grain traders, brokers and mediators, representatives of shipping and transport logistics. A direct personal survey with thematic blocks was used (identification data; climatic factors and irrigation; production technologies; port and road infrastructure; marketing and digitalization; cooperation), evaluated on a five-point Likert scale. The sample includes respondents with combined roles: grain producers – 51%, traders – 26.67%, brokers – 15%, logistics – 10%, and 4% – other experts. The total area of the farms is approximately 430,000 hectares, with large and very large farms comprising 93.14%. Cronbach's Alpha (0.70–0.84) was calculated, confirming good internal consistency. The data were processed through statistical grouping and graphical methods; weighted scores by blocks and a composite stability index were calculated.

The fourth step substantiates possible strategic directions for market development, derived from the analysis of the macroenvironment, competitive configuration and participant attitudes: maintenance of trends, technological and organizational improvements, management of climatic and geopolitical risks, and evaluation of the effects of alternative policy interventions.

## CHAPTER TWO. STUDY OF THE GRAIN MARKET IN THE COUNTRIES OF THE BLACK SEA REGION

In paragraph 2.1, *“The strategic significance of the Black Sea region in international trade of grain crops”*, the role of the Black Sea region as a connecting geoeconomic corridor between Europe, the Caspian Basin, Central Asia and the Middle East, with projections towards Southeast Asia, is presented. The concentration of strategic interests, infrastructural dependencies and politico-economic interactions are examined (Vasilev & Zlatev, 2019; Bakan & Büyükgüngör, 2000; European Parliament, 2019).

The geomorphological parameters of the region and its access to international sea routes determine its key significance for global food security (Figure 3).



**Figure 3: Map of the Black Sea Region**  
**Source: Bakan, 2000**

The paragraph emphasizes the methodologically defined focus of the study — Bulgaria, Romania, Ukraine and the Russian Federation, which form the main axis of the Black Sea grain market (Vasileva, 2023; Dimitrova et al., 2017).

The countries of the region provide approximately one third of global grain exports (Table 1), which makes them a strategic factor in international trade. The onset of the military conflict between Russia and Ukraine in 2022 led to significant disruptions in trade flows, logistics and price stability (WFP, 2022; European Parliament, 2023; Chepeliev et al., 2025).

**Table 1**

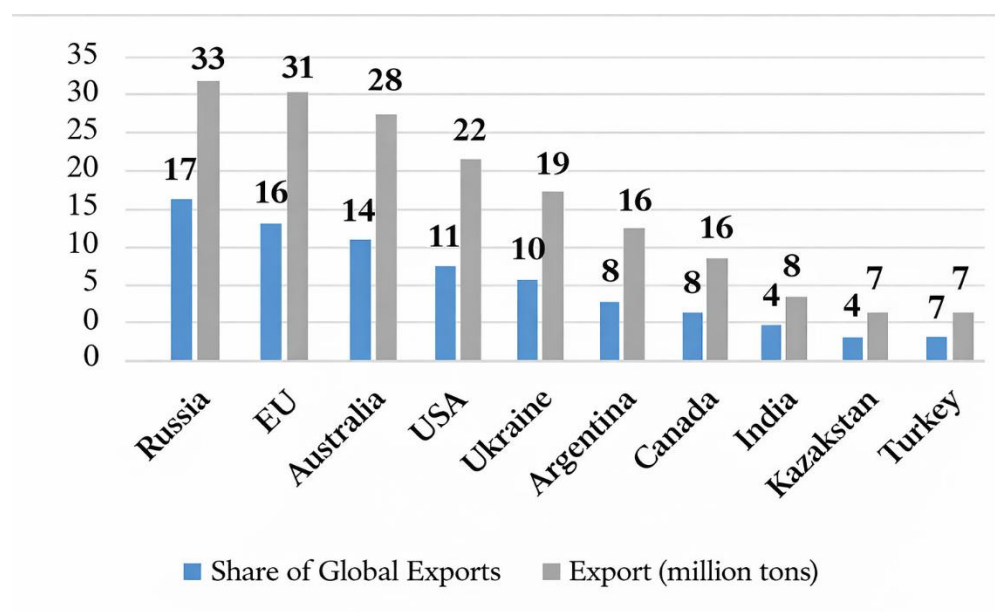
**Wheat production in the Black Sea region for the period 2000–2023**

<b>Year</b>	<b>Bulgaria</b>	<b>Romania</b>	<b>Ukraine</b>	<b>Russia</b>
2000	3,406,293	4,650,000	10,370,000	46,996,000
2001	4,077,497	5,480,000	21,450,000	50,622,000
2002	4,122,765	4,750,000	20,790,000	34,070,000
2003	2,003,937	7,520,000	10,350,000	45,434,000
2004	3,961,178	8,070,000	17,650,000	47,615,000
2005	3,478,066	7,290,000	18,950,000	44,927,000
2006	3,301,882	7,810,000	15,140,000	49,372,000
2007	2,390,610	3,410,000	13,760,000	63,781,000
2008	4,632,210	7,390,000	26,120,000	61,663,000
2009	3,976,852	5,870,000	21,090,000	56,293,000
2010	4,094,572	6,530,000	17,140,000	52,140,000
2011	4,458,492	7,540,000	22,570,000	37,767,000
2012	4,455,104	5,210,000	15,990,000	41,555,000
2013	5,504,941	7,390,000	22,580,000	59,713,000
2014	5,347,078	8,140,000	24,420,000	61,811,000
2015	5,011,597	8,640,000	26,470,000	73,346,000
2016	5,662,721	9,670,000	26,350,000	86,003,000
2017	6,132,671	10,120,000	26,820,000	85,900,000
2018	5,832,449	10,000,000	25,010,000	74,335,000
2019	6,161,997	8,310,000	28,640,000	72,136,000
2020	4,710,993	9,410,000	25,110,000	75,900,000
2021	7,230,000	11,110,000	33,150,000	76,060,000

Year	Bulgaria	Romania	Ukraine	Russia
2022	6,650,000	10,450,000	21,210,000	85,000,000
2023	6,030,000	9,030,000	20,230,000	91,500,000

Within the analysis, the dynamics of wheat production in Bulgaria, Romania, Ukraine and Russia for the period 2000–2023 are examined, noting a sustained upward trend and cyclical fluctuations influenced by climatic, technological and political factors (FAO; OECD-FAO; Liefert et al., 2020).

The paragraph also presents a comparative analysis of the market positions of the countries in the region within global trade of grain crops. The leading role of Russia and Ukraine is emphasized, as well as the stable, though more limited, contribution of Bulgaria and Romania (Figure 4).



**Figure 4: Largest wheat exporters in the world in 2021**

**Source:** USDA, 2022

According to USDA data, the countries of the Black Sea region — Russia, Ukraine, Romania and Bulgaria — accounted for 33% of global wheat trade in the 2021/2022 agricultural year. This significant share necessitates an in-depth study of the region, its specific features, and the leading trends in its development. Market shares in wheat exports in 2023 confirm the significance of the region (Table 2): Russia – 17.4% of global exports,

Ukraine – 6.2%, Romania – 1.9%, Bulgaria – 1.1% (USDA, IGC, European Commission, Ministry of Agriculture and Food).

**Table 2**

**Market share of Black Sea region countries in global wheat exports (2023)**

<b>Country</b>	<b>Exports (tons)</b>	<b>Global share (%)</b>
Russia	45,000,000	17.4
Ukraine	16,000,000	6.2
Romania	5,000,000	1.9
Bulgaria	3,000,000	1.1

In summary, paragraph 2.1 demonstrates the strategic role of the Black Sea region in international trade of grain crops. The region is characterized by favorable agroclimatic conditions, high production efficiency, and developed export infrastructure, while at the same time being exposed to significant risks arising from geopolitical instability, climate change, and limited port and transport connectivity.

In the following **second paragraph of Chapter Two, “National profiles of the grain market in the Black Sea region”**, the national characteristics of the grain market in the four leading countries of the Black Sea region — Bulgaria, Romania, Ukraine, and the Russian Federation — are presented. The analysis is built upon a unified methodological framework, including the study of production structures, cost dynamics, yields, export potential, and regulatory specifics. The emphasis is placed on the factors that determine the competitiveness and sustainability of national markets in the context of regional integration and global food security.

### **Bulgaria**

Bulgaria is a country with long-standing traditions in grain production, where the market for grain crops holds strategic significance for the national economy and for ensuring food security. Production is characterized by favorable agroclimatic conditions, concentration of large-scale farms, and sustainable export potential

(Doychinova & Stoyanova, 2024). In recent years, an increase in efficiency has been observed, associated with modernization of production technologies and adaptation to the requirements of the Common Agricultural Policy.

**Table 3**  
**Production costs per unit of agricultural output (wheat) per hectare in Bulgaria (BGN) for the period 2022–2023**

*Source: Author's own calculations based on data from farms in Northeastern Bulgaria*

Resource type	Quantity 2022	Unit price/ BGN 2022	Value/ BGN 2022	Quantity 2023	Unit price/ BGN 2023	Value/ BGN 2023
Seeds (kg)	25	0.41	10.25	25	0.51	12.75
Fertilizers (kg)	25.3	1.56	39.47	29.85	0.69	20.60
Chemicals (pcs)	1	5.93	5.93	1	6.74	6.74
Spare parts (pcs)	1	3.20	3.20	1	6.50	6.50
Fuel and lubricants (l)	8.4	2.32	19.49	9.57	2.16	20.67
Depreciation (pcs)	1	35.56	35.56	1	47.01	47.01
Wages and social security (pcs)	1	40.56	40.56	1	58.26	58.26
Other (transport, services, etc.) (pcs)	1	41.00	41.00	1	51.34	51.34
<b>Total/ BGN</b>			195.46			223.87
Total per ton of product/ BGN			358.00			375.00
Including subsidies/ BGN			303.00			292.00

Analysis of production costs (Table 3) shows that the prices of fertilizers, energy resources, and labor have the main influence on the cost price. In 2022, a significant increase in costs was recorded due to higher prices of natural gas and fuels, whereas in 2023, a partial stabilization was observed, resulting from market normalization and recovery of production capacities in Europe. Nevertheless, the increase in labor and depreciation costs keeps overall production values at relatively high levels (Table 4).

In parallel with wheat, the dynamics of production parameters for maize show similar trends — a reduction in fertilizer and energy costs in 2023, partially offset by increases in the prices of seeds, spare parts, and transport services. This confirms the overall dependence of grain production on the international conditions of the raw materials and energy markets.

**Table 4**

**Production costs per unit of agricultural output (maize) per hectare in Bulgaria  
(BGN) for the period 2022–2023**

*Source: Author's own calculations based on data from farms in Northeastern Bulgaria*

Resource type	Unit	Quantity 2022	Unit price 2022 (BGN)	Cost 2022 (BGN)	Quantity 2023	Unit price 2023 (BGN)	Cost 2023 (BGN)
Water and electricity	pcs	1	0.84	0.84	1	0.63	0.63
Seeds	kg	1	14.80	14.80	1	15.81	15.81
Fertilizers	kg	29	1.56	45.24	40.27	0.69	27.79
Chemicals	pcs	1	4.38	4.38	1	6.26	6.26
Spare parts	pcs	1	3.56	3.56	1	6.00	6.00
Fuel and lubricants	l	13.5	2.32	31.32	14.94	2.16	32.27
Depreciation	pcs	1	36.00	36.00	1	35.26	35.26
Wages and social security	pcs	1	38.25	38.25	1	50.99	50.99
Other (transport, external services)	pcs	1	41.57	41.57	1	48.00	48.00
<b>Total</b>				215.96			223.01
Total per ton				677.00			459.81
Including subsidies				570.00			376.81

Despite the increasing cost burden, subsidies and support under the CAP have a compensatory effect, limiting the pressure on profitability. This maintains stability in the sector and ensures its participation in the region's export flows. Bulgaria sells

a significant portion of its grain production to foreign markets, with the main destinations being European Union countries and Asia.

**Table 5**

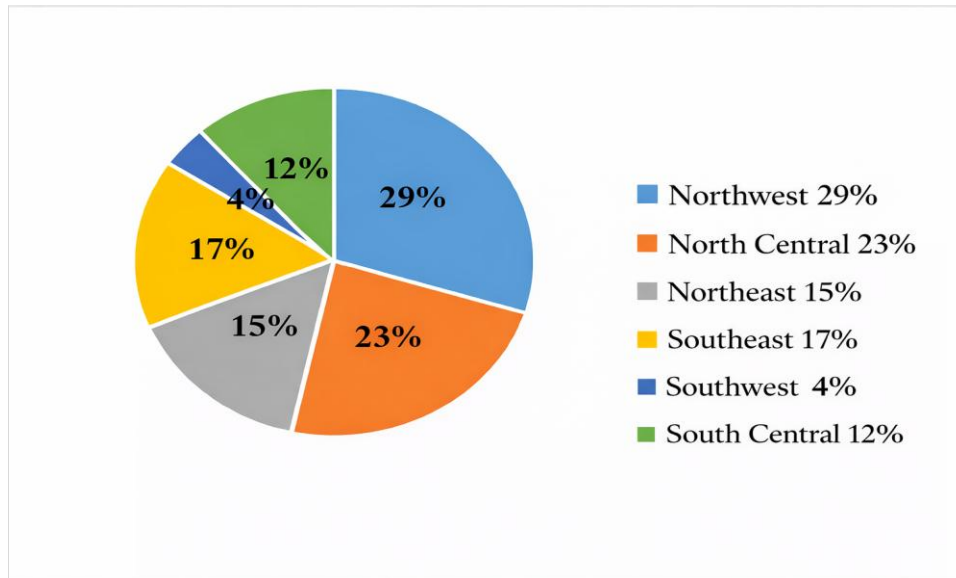
**Exported quantities of wheat, barley, and maize from Bulgaria by year for the period 2020/21 – 2023/24**

<b>Product</b>	<b>Period</b>	<b>Quantity (thousand tons)</b>
Wheat	2020/21	3,568.7
	2021/22	5,803.3
	2022/23	4,084.3
	2023/24 (July – January)	4,053.0
Barley	2020/21	319.0
	2021/22	443.5
	2022/23	256.0
	2023/24 (July – January)	358.5
Maize	2020/21	1,724.9
	2021/22	1,613.2
	2022/23	1,258.7
	2023/24 (September – January)	1,656.0

**Sources:** Market Situation Report for Grain and Oilseed Crops in Bulgaria, Ministry of Agriculture, Food and Forestry (2023); Ministry of Agriculture, Food and Forestry (2024)

In 2022/23, a temporary reduction in exports was observed, but in the following year this trend reversed due to increased demand from Southern European and Asian markets (Table 5).

The regional structure of production demonstrates a pronounced concentration in Northern Bulgaria, where over two-thirds of the national wheat and maize volume is produced (Figure 5). This territorial specialization is determined by fertile soils, favorable climatic conditions, and well-developed infrastructure.



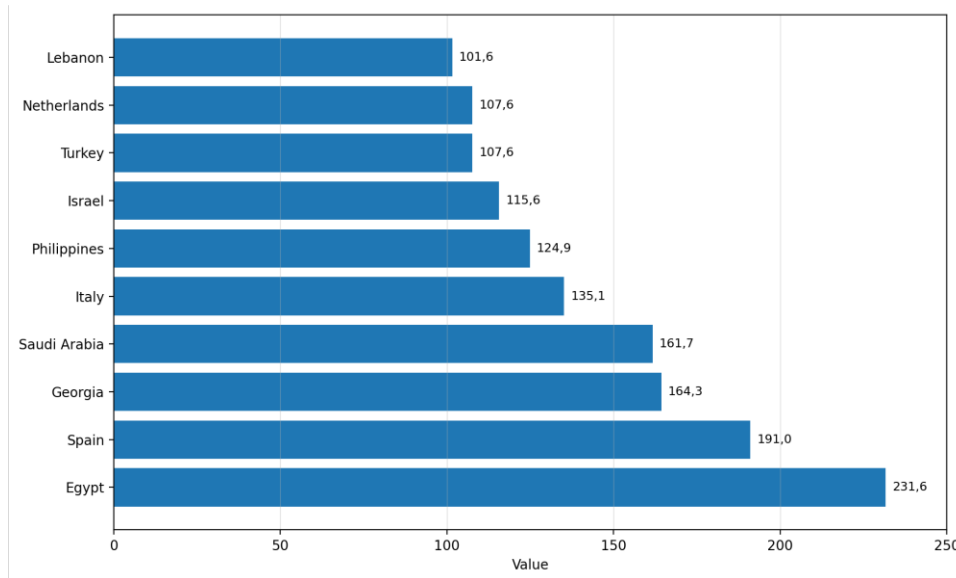
**Figure 5: Production of wheat, barley, and maize in Bulgaria by regions, in percentage terms**

**Source:** Ministry of Agriculture, Food and Forestry, Department of Agrostatics, Observation “Field Crop Yields”

In the southern regions, production results are more limited due to specific natural and climatic conditions and less developed irrigation infrastructure. Nevertheless, the observed regional differences confirm the country’s stable specialization in grain crop production.

### **Romania**

Romania is among the leading grain producers in the European Union and has strategic significance for the Black Sea region. With nearly 15 million hectares of arable land and a developed logistics infrastructure, the country ranks among the largest wheat exporters in Europe (Popescu, 2018). Its main competitive advantage is the port of Constanța — the largest grain terminal in the region, which ensures high efficiency in export operations.



**Figure 6: Leading export markets for grain crops from Romania for the year 2020, in US dollars (USD)**

**Source:** Comtrade, 2020

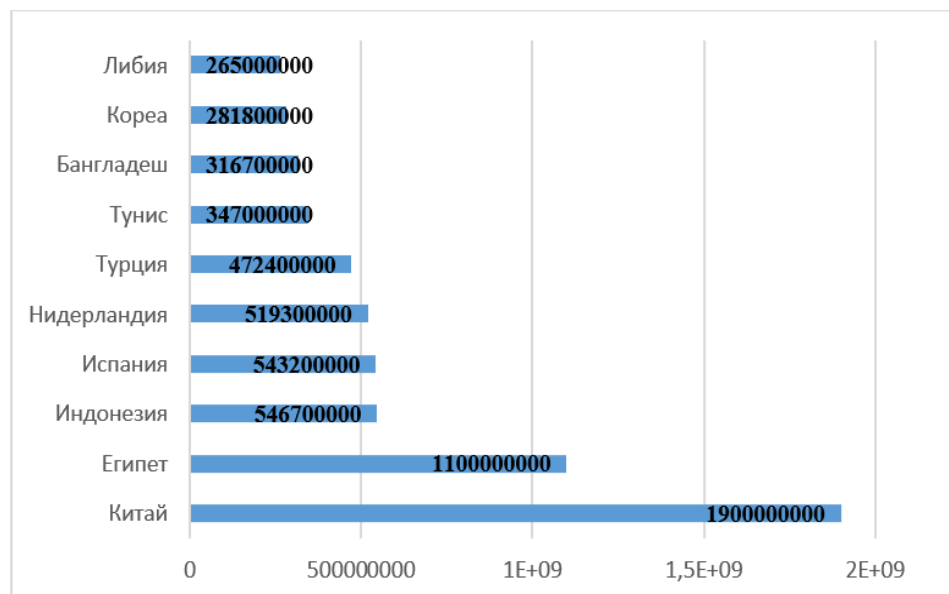
The main foreign markets for Romania include Egypt, Spain, Saudi Arabia, and Georgia, with the country's geographic location and port infrastructure ensuring stable participation in international wheat and maize trade (Figure 6). Romania demonstrates sustained growth in agricultural production and an increasing role in maintaining food security in the Black Sea region.

### **Ukraine**

Ukraine is among the most significant producers and exporters of grain crops in the world. Its production structure is based on large-scale agricultural areas, high productivity, and favorable soil and climatic conditions. Until 2021, the country achieved record yields and exports, accounting for approximately 10% of global wheat exports and 14% of maize exports (FAO, 2023).

After 2022, the trade infrastructure and export channels have been seriously affected by military actions, leading to changes in logistical routes and an increase in transportation and insurance costs.

Nevertheless, Ukraine continues to be a significant participant in international trade, conducting exports via alternative overland and river routes.



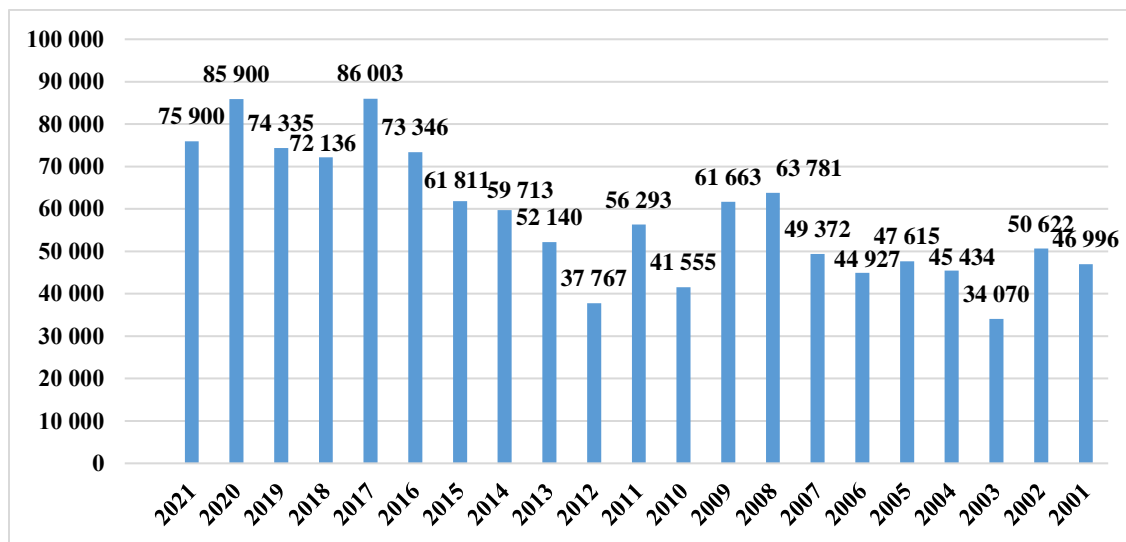
**Figure 7: Leading export markets for grain crops from Ukraine for the year 2020, in US dollars (USD)**

**Source:** Comtrade, 2020

Figure 7 presents Ukraine’s leading export markets for 2020, measured by the value of exported grain crops. According to international trade statistics (Comtrade, 2020), total revenues from these exports amount to approximately USD 9.4 billion. The sector’s development is characterized by a high degree of adaptability, supported by foreign investments, modern agrotechnical equipment, and institutional mechanisms for stabilizing exports.

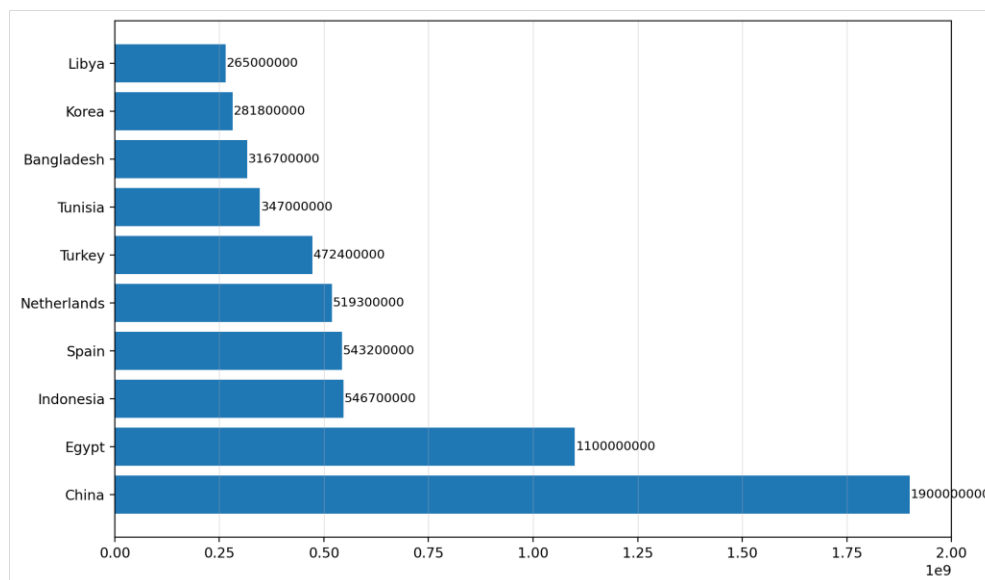
### **Russian Federation**

The Russian Federation is a leading producer (Figure 8) and the largest exporter of wheat in the world. Over the past two decades, the country has implemented a consistent state policy to stimulate grain production, including subsidies, investments in machinery, and expansion of storage and port capacities (FAO, 2021).



**Figure 8: Wheat production in Russia for the period 2001–2021, in million tons**  
**Source: FAO, 2021**

The production structure is primarily concentrated in the southern regions – Krasnodar, Rostov, and Stavropol – where agro-climatic conditions allow for high yields and stable harvests. The main export destinations are Turkey, Egypt, and Saudi Arabia, which constitute a significant share of export revenues (Figure 9).



**Figure 9: Leading export markets for cereals for Russia for the year 2020 in USD**  
**Source: Comtrade, 2020**

Despite its dominant position in the international market, the market's dependence on a limited number of key trading partners creates risks in cases of geopolitical or economic instability. In this context, Russia continues to expand its strategic presence in Asian and African markets in order to diversify trade flows.

In summary, the national profiles of the cereal market in the Black Sea region demonstrate a structural interdependence between production and trade systems. Bulgaria and Romania, as European Union members, are characterized by a high degree of regulatory alignment and technological modernization, whereas Ukraine and Russia dominate through scale and resource potential. This complementarity positions the region as a strategic hub in global cereal trade and as a key factor in global food security.

**In paragraph 2.3, “*Factors Determining the Sustainability of Grain Production, Price Dynamics, and Market Stability,*”** an analysis is presented of the main macroeconomic, agro-climatic, institutional, and market factors influencing the functioning and stability of the cereal market in the Black Sea region countries. The interaction between the external economic and political environment, climate change, production costs, and logistical constraints is examined, highlighting their interdependence and impact on price dynamics and sectoral competitiveness. The analysis is structured around the systematization of the key factors into thematic groups, including climatic conditions, international policy and economic trends, state regulation and interventions, financing and insurance, infrastructure, access to information, and logistics.

Special attention is given to the impact of climate change on production sustainability, product quality, and price predictability in the markets. It is noted that the increasing frequency of droughts and temperature anomalies leads to reduced yields and heightened market volatility. Based on data from the IPCC, FAO, and the

National Institute of Meteorology and Hydrology, climate change is identified as a structural risk for the agricultural sector, requiring long-term adaptation through drought-resistant crop varieties, digitalization, and investment in irrigation infrastructure.

The paragraph also examines the influence of the international political and economic environment on price dynamics and trade flows in the region. It is highlighted that the military conflict between Russia and Ukraine has caused significant disruptions in exports, increased production costs, and heightened uncertainty in global grain markets. It is clarified that rising prices for energy resources, fertilizers, and transport services have a multiplicative effect on production costs.

The role of transport security and logistical routes in market functioning under conditions of military conflict is illustrated in Figure 10.



**Figure 10. Humanitarian Corridor for Grain Exports through Ukraine**  
Source: UN, 2022

It is concluded that disruptions in trade connections through Black Sea ports lead to global price fluctuations and increased risk of food insecurity, particularly for import-dependent countries.

The analysis also addresses state regulation and the mechanisms applied to support the sector. Particular attention is given to customs procedures, subsidies, strategic reserves, and the role of market structures. It is noted that countries such as Russia and Ukraine implement large-scale subsidy and intervention programs, whereas in Bulgaria and Romania the focus is on eco-schemes and measures under the EU Common Agricultural Policy (CAP).

The influence of the financial environment on credit costs and liquidity in the sector is presented. Additionally, the impact of infrastructure and logistical factors on the competitiveness of countries in the region is examined. It is emphasized that well-developed port and transport infrastructure is crucial for integrating producers into international trade. The main advantages of the Constanța and Novorossiysk ports are highlighted, as well as the limited capacities of Varna and Burgas due to technical and throughput constraints. The need for investments in modernization and connectivity with European transport corridors is stressed.

The paragraph also analyzes the role of information resources and market expectations in shaping price dynamics. It is noted that data from international organizations such as the FAO, the World Bank, and the International Monetary Fund, as well as forecast reports from the IGTC and USDA, influence market sentiments and often generate speculative price fluctuations. The need for a more transparent and timely information environment is emphasized to limit market speculation and stabilize price expectations.

In the concluding part of the paragraph, the main interdependencies between the examined factors are summarized. It is concluded that the resilience of the grain market in the Black Sea region is determined by the combined effects of climate

change, geopolitical processes, infrastructure constraints, and financial conditions. Market stability can be ensured through targeted investments in production and logistics modernization, adaptation to climate risks, diversification of energy sources, implementation of technological innovations, and enhanced information transparency.

### **CHAPTER THREE. OPPORTUNITIES FOR PROMOTING STABILITY AND DEVELOPMENT OF THE GRAIN MARKET UNDER INTERNATIONAL TRADE CONDITIONS**

**In paragraph 3.1, “Competitive Environment of the Grain Market: Current State and Expectations,”** the application of M. Porter’s model, adapted to the specifics of Bulgarian grain production, is presented to assess the intensity of the main competitive forces and the role of the institutional environment. Entry and exit barriers, rivalry, bargaining power of clients and suppliers, and the role of government institutions are analyzed, with expert opinions aggregated into average scores across thematic blocks for both the current and expected future state.

The current state of the competitive environment is discussed: it is highlighted that market entry is hindered by high capital requirements and uncertain sales channels for smaller farms; economies of scale are often underutilized due to the fragmented structure of farms and limited cooperation; product differentiation is moderate for basic crops, while niche segments (organic, specialty varieties, drought-resistant lines) allow differentiation. Asset specialization and internal contractual commitments create tangible exit costs, and rivalry is high due to slow market growth, sensitive fixed costs, and price volatility. Clients (traders/processors) retain significant bargaining power, while suppliers (fuel, fertilizers, seeds, crop protection products) maintain persistent pressure on production costs. Government support is

assessed as limited, protectionist, and inconsistent, particularly regarding irrigation, logistics, and digital connectivity.

Expectations for future development are also considered: a relative reduction in entry barriers for small and medium producers is expected with accelerated investments in irrigation, precision agriculture, and cooperative logistics solutions, which will enhance the experience effect. The bargaining power of clients and suppliers is expected to partially normalize through counterparty diversification, joint purchases, group tenders, and improved access to export infrastructure. Rivalry is gradually shifting from purely price-based competition toward efficiency, quality, reliability of supply, and traceability. Institutionally, moderate improvements in predictability are anticipated with targeted public investments in infrastructure and climate risk management tools.

**Table 6**

**Average Scores by Block in the Assessment of Competitiveness in the Grain Production Sector**

<b>Block</b>	<b>Avg. Score (Current)</b>	<b>Avg. Score (Future)</b>
1. Entry Barriers	3.6	2.8
2. Exit Barriers	2.7	3.3
3. Rivalry in the Sector	2.2	3.7
4. Bargaining Power of Clients	2.5	3.1
5. Bargaining Power of Suppliers	2.8	3.2
6. Role of Government Institutions	3.4	3.0
<b>Overall Average</b>	<b>2.87</b>	<b>3.35</b>

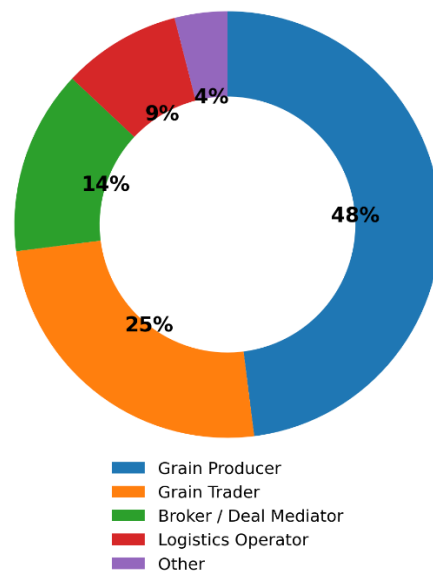
The main results are summarized (Table 6): the average score for the current attractiveness of the sector is moderate (2.87), with key constraints being high capital requirements, price instability, and the bargaining power of suppliers and clients. The projected future score (3.35) indicates an expected improvement driven by technological modernization, cooperative initiatives, and infrastructure

enhancements, which would lower entry barriers, reduce pressure from suppliers, and shift competition toward productivity and quality.

In conclusion, the “Grain Production” sector is transitioning from an environment dominated by price factors and structural constraints toward a more balanced market regime, in which strategic investments, value chain partnerships, and institutional predictability are decisive for long-term competitiveness.

Paragraph 3.2, “Attitudes and Perceptions of Grain Market Participants Regarding Sector Stability,” presents the attitudes and perceptions of the main market participants concerning sector stability, based on the applied methodological framework and the conducted survey.

The paragraph examines the respondents’ identification characteristics (Figure 11), the structure and mode of land use, the dynamics of yields and revenues, the dominant sources of financing, and their attitude toward European programs. It also presents evaluations across key factor blocks: climate and irrigation, production technologies, road and port infrastructure, marketing, and cooperation.



**Figure 11: Profile of Survey Participants**

It is noted that the sample includes the main roles along the supply chain (producers, traders, brokers/mediators, logistics operators), with some respondents combining more than one function, which enhances the validity of the sector assessments.

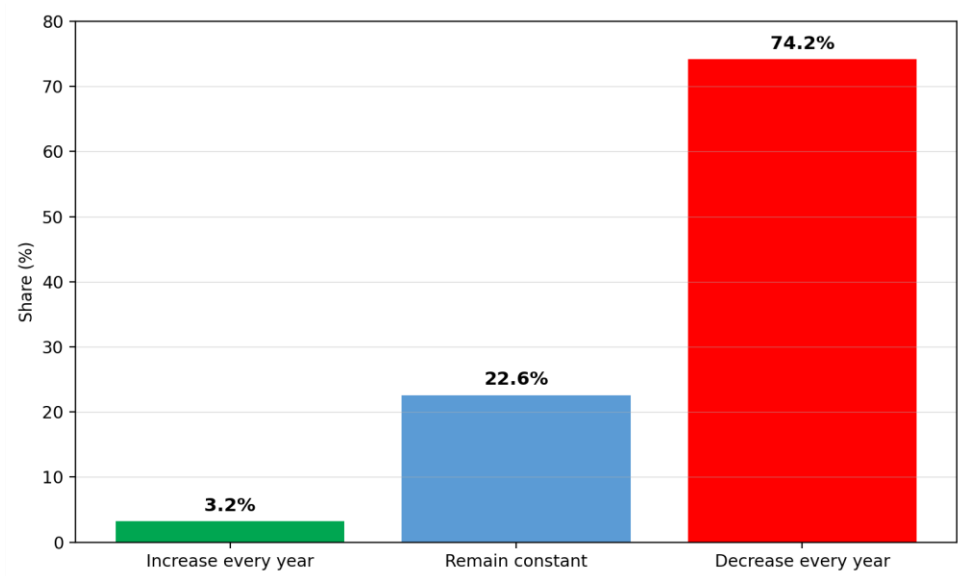
**Table 7**

**Structure of Grain Producers Surveyed, by Farm Size (including owned and leased/rented land)**

<b>Farm Size</b>	<b>% of Total Number</b>	<b>% of Total Area</b>	<b>Average Farm Size (da)</b>
Up to 50 da	6.3%	0.0%	39
51 to 300 da	6.3%	0.1%	230
301 to 6,500 da	43.8%	6.7%	2,067
6,501 to 15,000 da	21.9%	15.8%	9,700
Over 15,000 da	21.9%	77.3%	47,470

The obtained distribution by farm categories shows a clear concentration of supply in large and very large farms, while all size groups are represented, providing a solid empirical basis for assessing market stability (Table 7).

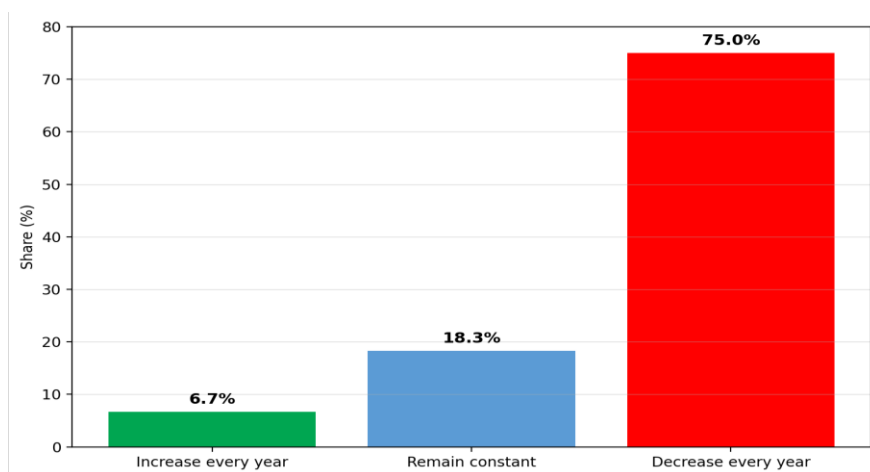
The analysis of land use confirms a predominant reliance on leased/rented land among medium, large, and very large farms, which makes the sector more sensitive to changes in lease arrangements.



**Figure 12: Changes in Grain Yields**

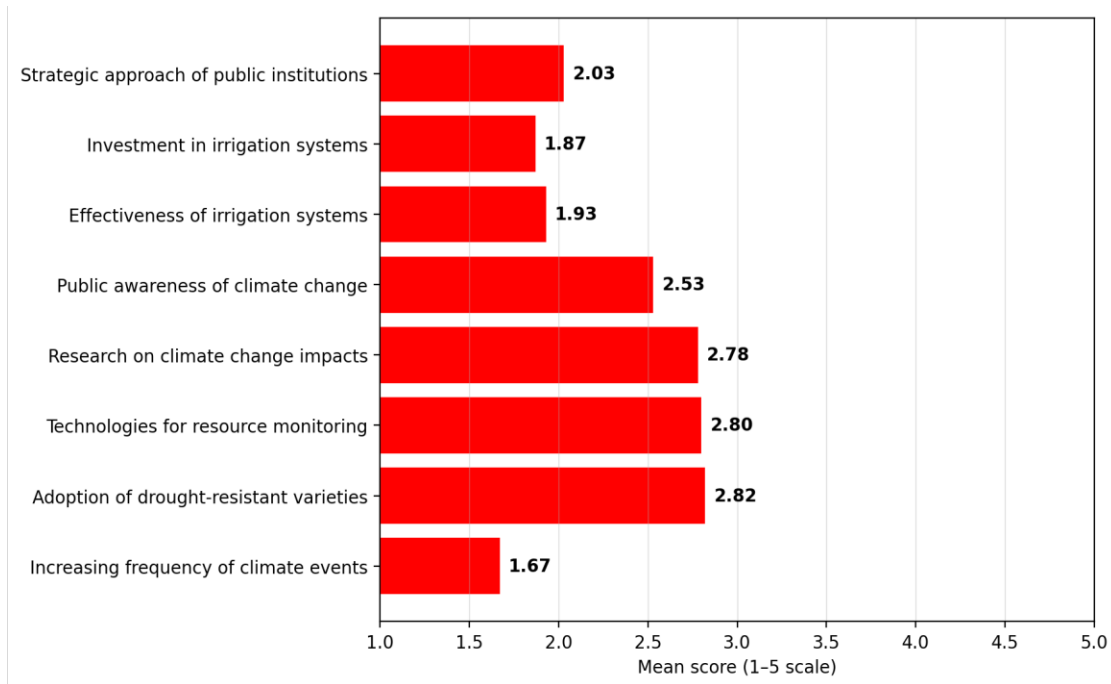
The results for yield dynamics indicate a prevailing trend of decline, primarily explained by climatic factors (droughts, temperature anomalies, extreme events) and insufficient irrigation infrastructure, alongside increased production costs (Figure 12).

Alongside yields, revenues also follow an adverse trend (Figure 13) across most segments of the value chain, with respondents linking this to climatic and geopolitical shocks, price volatility, rising production costs, and limited access to predictable markets.



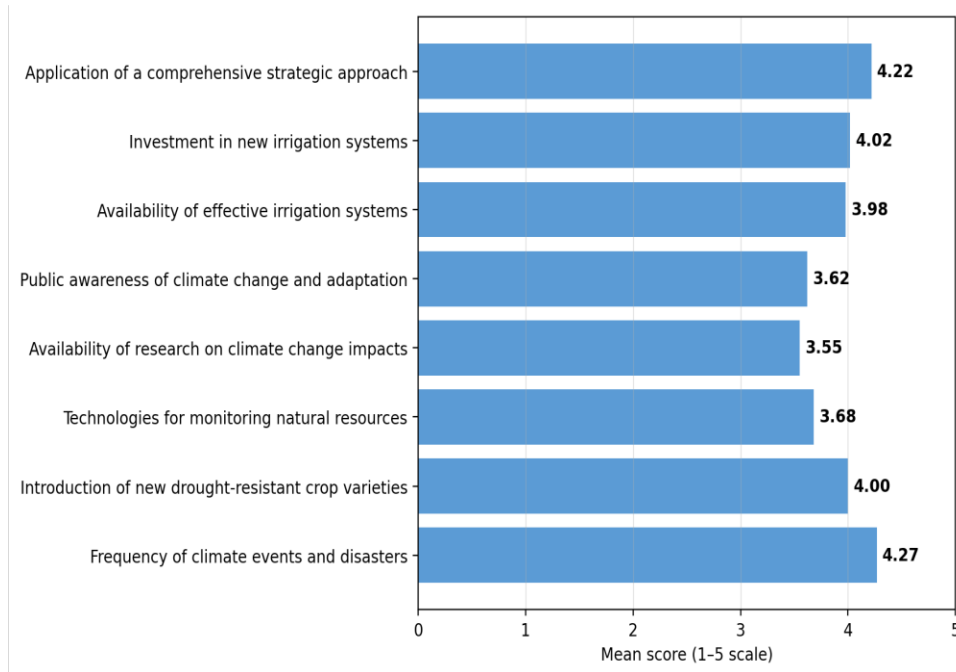
**Figure 13: Changes in Revenues of Companies in the Grain Production Sector**

Regarding financing, own funds and bank loans prevail, while EU Common Agricultural Policy (CAP) subsidies are widely used as a supplementary source. Attitudes toward future European funding are positive for the majority, but information gaps and inconsistencies with program requirements are noted.



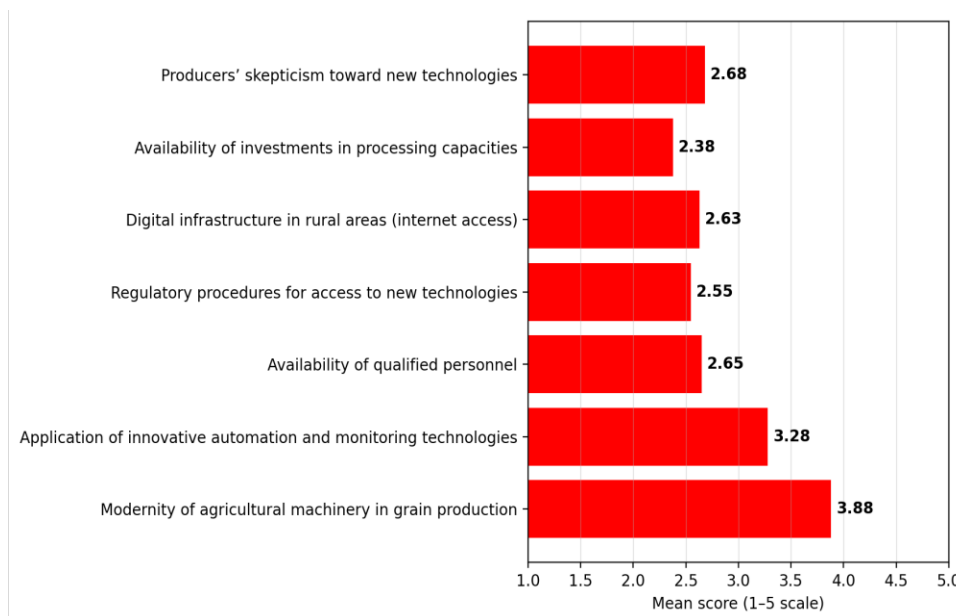
**Figure 14: Average Ratings of Agreement/Disagreement with Statements Related to the Impact of Climate Change and Irrigation in Grain Production**

The ratings for the “Climate and Irrigation” block (Figure 14) are predominantly critical (values below 3), with relatively better scores for the implementation of drought-resistant crop varieties and natural resource monitoring (Figure 15). However, investment levels and the efficiency of irrigation systems, as well as strategic coordination of adaptation measures, remain low.



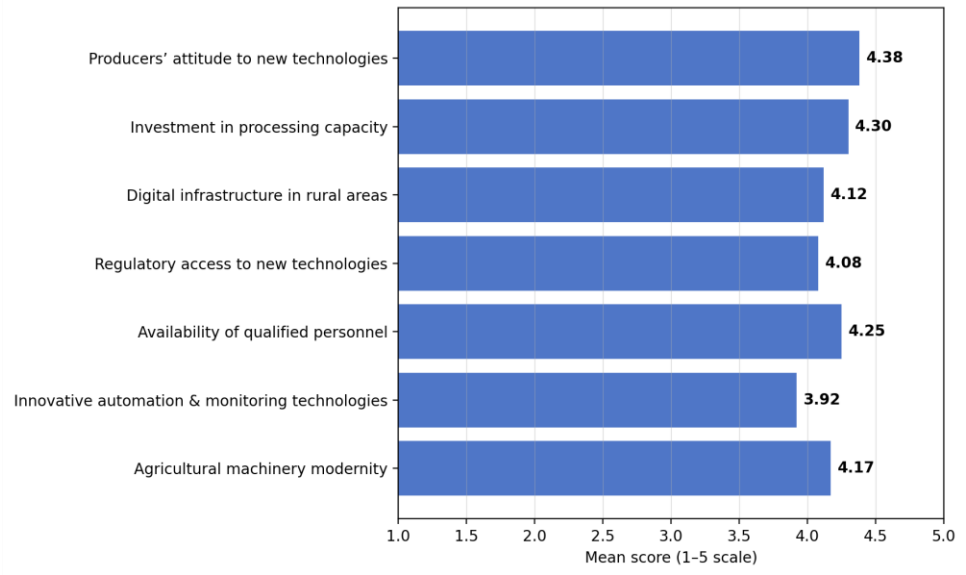
**Figure 15: Importance of climate- and irrigation-related factors for the stability of the grain market**

The highest importance is attributed to the frequency of climatic events, the strategic institutional approach, and investments/efficiency in irrigation, highlighting priorities for both public and private interventions.



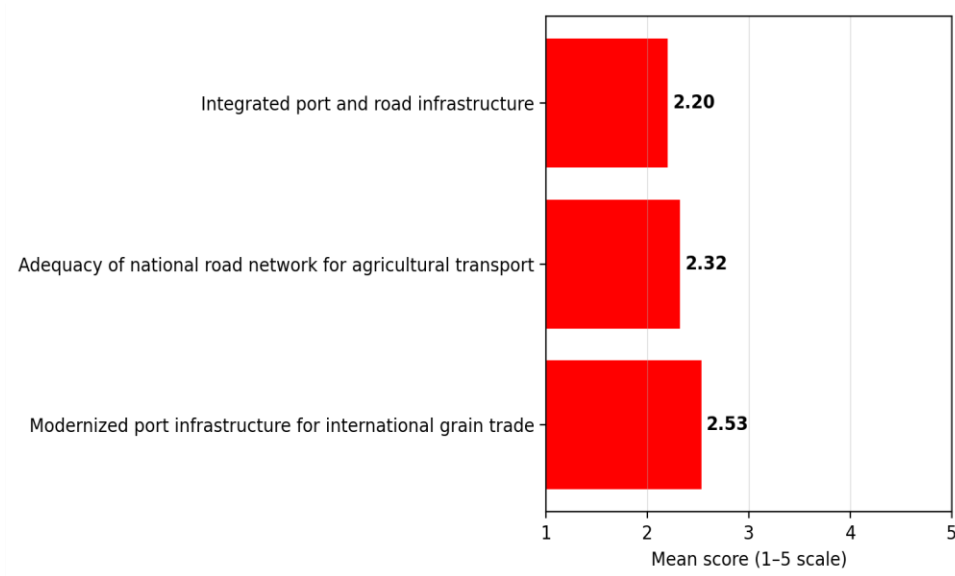
**Figure 16: Average agreement/disagreement scores with statements related to the impact of technologies in grain production**

In the “Production Technologies” block (Figure 17), a relatively good level of mechanization is observed, but the adoption of automation and digital monitoring is weaker, alongside deficits in skilled personnel and processing capacities, as well as administrative barriers to access new technologies



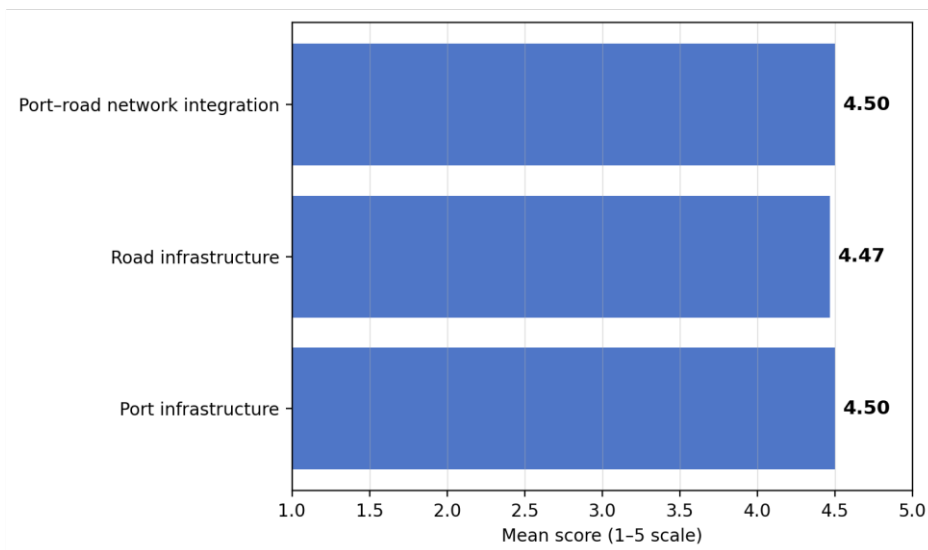
**Figure 17: Average scores for the importance of technology-related factors in grain production on market stability**

In terms of significance, attitudes toward innovation, human resources, and processing investments stand out; digital infrastructure and regulatory clarity are recognized as important, yet they remain prerequisites that need further development.



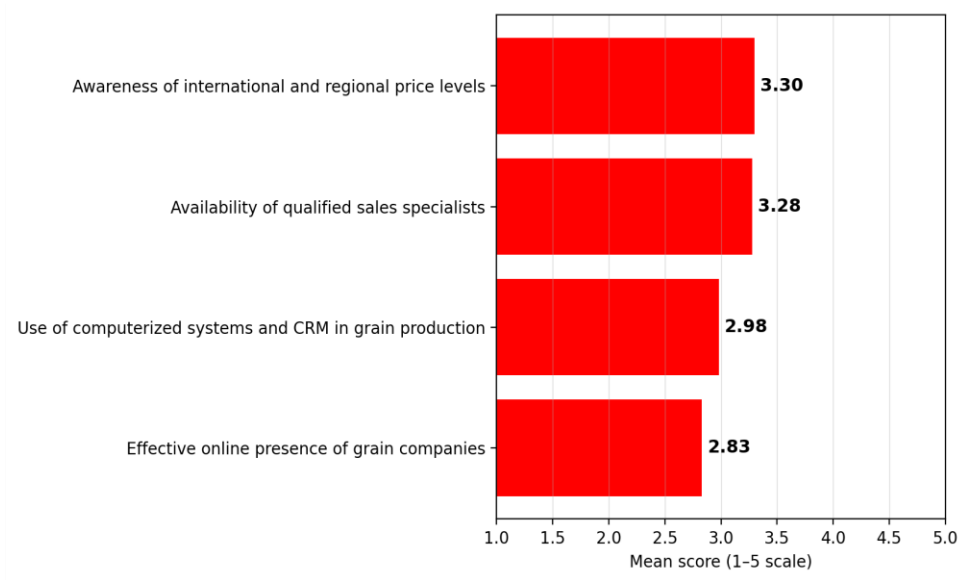
**Figure 18: Average scores for agreement/disagreement with statements related to infrastructure for grain production development**

The infrastructure ratings highlight the need for modernization of port facilities and better integration with road and rail networks to improve export efficiency.



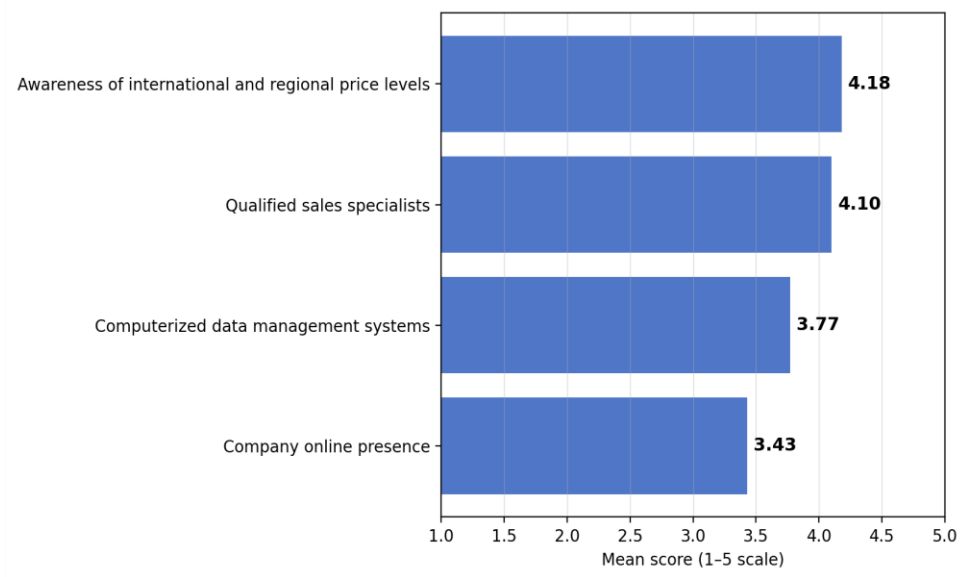
**Figure 19: Average scores for the importance of road and port infrastructure for grain market stability**

Port modernization and intermodal connectivity are highlighted as the most critical factors, reflecting the observed logistical constraints (Figure 19)



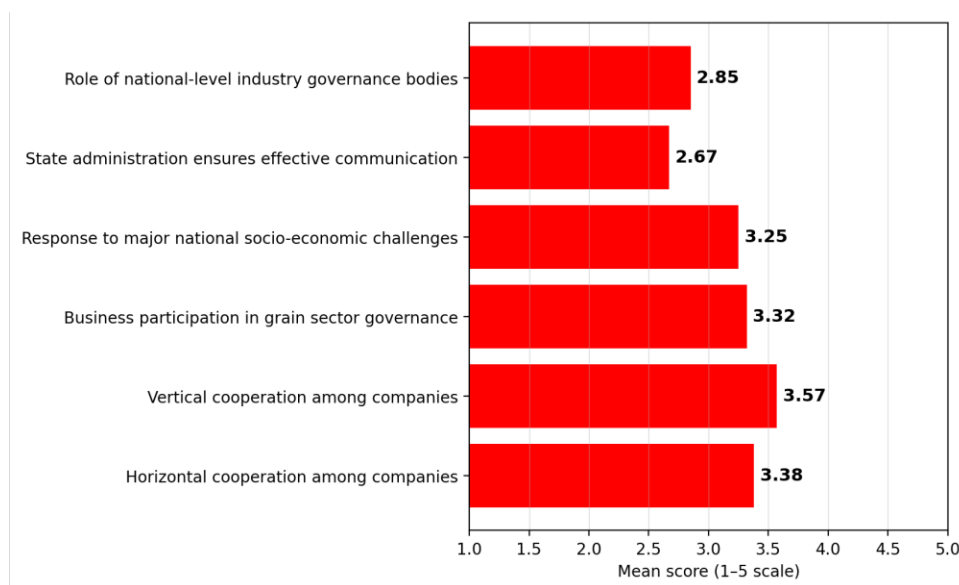
**Figure 20: Average scores for agreement/disagreement with statements related to marketing in grain production**

In the "Marketing" block (Figure 21), relatively higher values are observed for price awareness and staff training in sales, while CRM/ERP practices and online presence show weaker development.



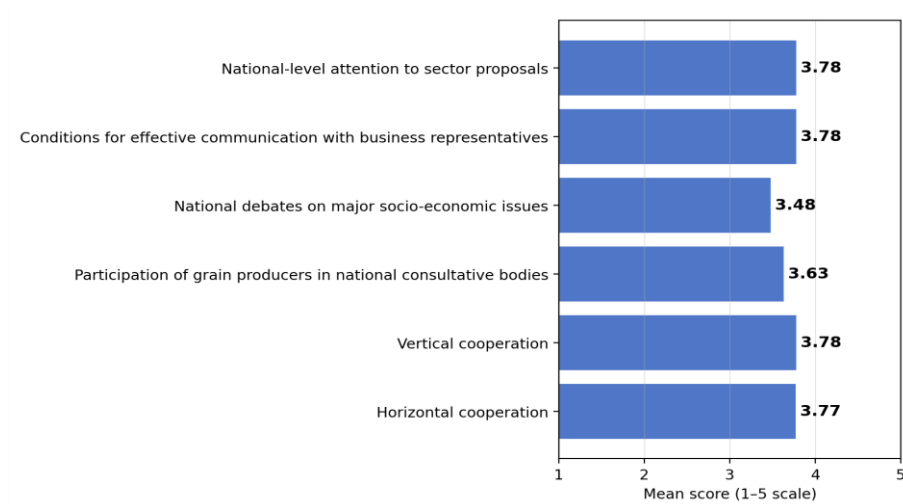
**Figure 21: Average scores for the importance of marketing for the stability of the grain market**

The highest importance is attributed to market awareness and the training of sales teams; digital systems are recognized as important but remain underutilized



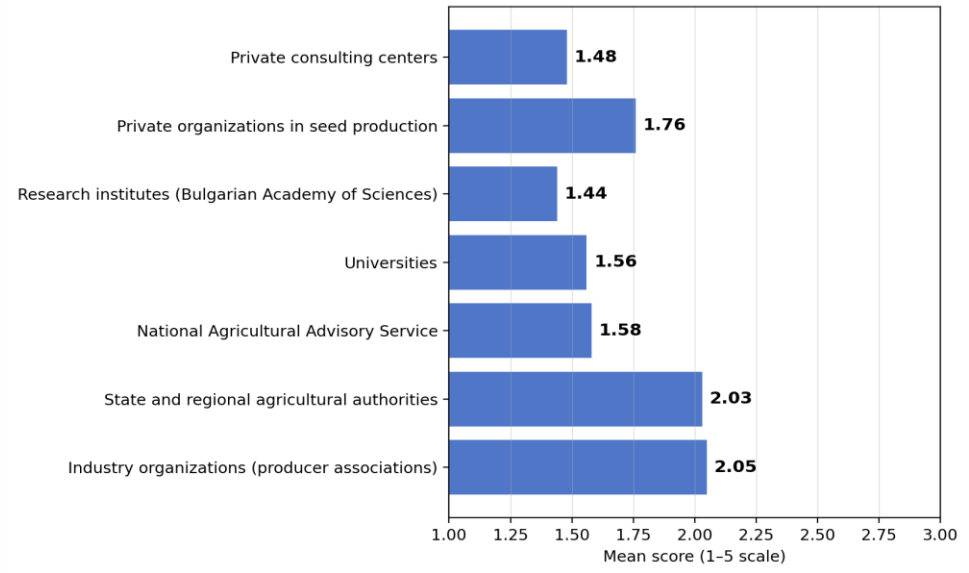
**Figure 22: Average scores for agreement/disagreement with statements related to cooperation in the grain market**

Vertical cooperation is the most developed, while horizontal collaboration among producers is expanding, though with room for improvement. Communication with public authorities and the reflection of business proposals are assessed as insufficient.



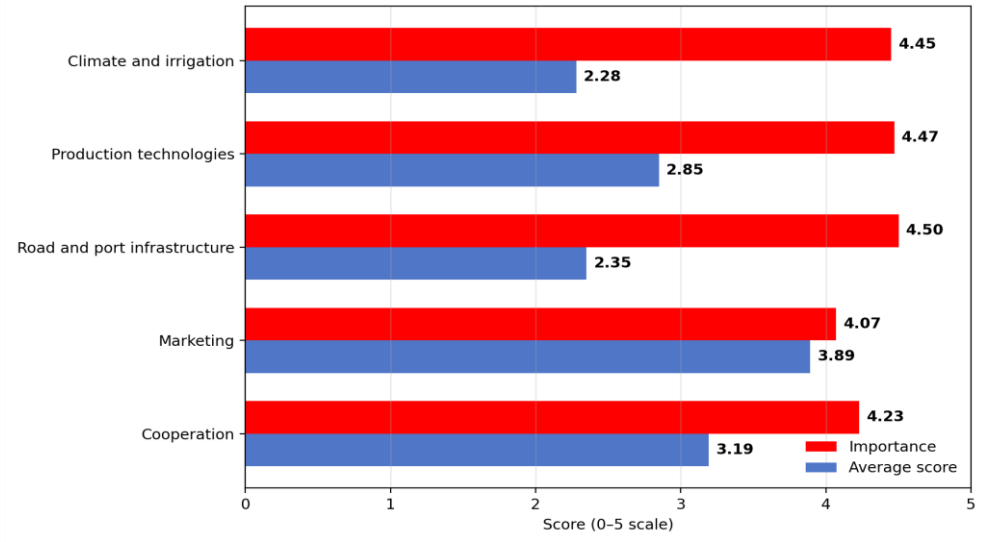
**Figure 23: Average scores for the importance of cooperation for the stability of the grain market**

The most significant aspects are vertical and horizontal partnerships, as well as the improvement of dialogue with public authorities, including through consultative processes.



**Figure 24: Cooperation with key consultancy structures in grain production**

The intensity of interaction is higher with industry and state/regional bodies, while links with research institutes and universities are limited, highlighting the need to strengthen knowledge transfer.



**Figure 25: Comprehensive assessment of the stability of the grain market in Bulgaria**

The overall composite stability score is 2.89 on a five-point scale (Figure 25). Critical factors are related to climate/irrigation and infrastructure, while marketing practices are relatively better developed. The results point to policy and management priorities: accelerated investments in irrigation and port connectivity, targeted implementation of precision and digital technologies, strengthening human capital, expanding horizontal and vertical partnerships, and improving the predictability and coordination of institutional measures. These directions align with the perceived importance identified by respondents and address the main sources of instability along the supply chain.

In the final paragraph of Chapter Three, “Strategic Guidelines for the Development of the Grain Market,” based on the comprehensive analysis of factors determining the resilience of grain production and market stability, as well as the empirical study of participants’ attitudes and perceptions, holistic strategic directions for the sector’s future development are formulated. The composite assessment of market stability indicates a relatively low level of resilience, resulting from a combination of adverse climatic conditions, high production costs, limited infrastructure, and insufficient institutional support.

Development opportunities focus on adaptation to climate change, technological modernization and human capital, infrastructure, financial support and insurance, marketing and digitalization, strengthened cooperation, and a consistent regulatory and institutional framework. Market participants identify climate change as the key risk to sector stability, confirmed both by secondary analysis and survey results. The “Climate and Irrigation” block received a mean score of 2.28, the lowest among all analyzed areas. The lowest scores were assigned to statements regarding the availability of efficient irrigation systems (1.93) and investments in new irrigation facilities (1.87) on a five-point scale, highlighting the urgent need for modernization and expansion of water management infrastructure. Respondents attach very high

importance to the frequency of climate events and disasters (4.27) and the need for a comprehensive strategic approach by institutions (4.22), signaling the necessity of active public adaptation policies.

In this context, the first strategic direction focuses on adaptation to climate change and sustainable management of natural resources, emphasizing: the modernization of irrigation infrastructure through construction and reconstruction of irrigation systems and public-private partnerships; investments in scientific research and the breeding of drought-resistant varieties of wheat, maize, and barley (reflecting existing but limited efforts – average score 2.82); development of natural resource monitoring systems and the creation of national/regional information platforms; institutional coordination and a long-term national adaptation strategy aligned with European policies and supported by adequate financial resources.

Technological modernization and human capital development constitute the second key direction. Empirical results confirm some progress in mechanization (3.88), but highlight deficits in the implementation of automated monitoring and management technologies (3.28), processing capacities (2.38), and availability of qualified personnel (2.65); scores are also relatively low for digital infrastructure in rural areas (2.63) and regulatory clarity (2.55). The importance of technological renewal is high: attitudes toward innovation (4.38), workforce training (4.25), and investments in processing (4.30). Priorities include: investments in digitalization and automation (precision agriculture, sensors, management systems); development of processing capacities and energy efficiency (modern dryers and silos near production areas); targeted training and qualification through partnerships between universities, vocational schools, and industry organizations; creation of demonstration farms and centers of best practices; and improvement of the regulatory framework through simplified procedures and pilot regulatory schemes for testing and implementing innovations.

The development of transport and port infrastructure constitutes the third strategic direction and a critical factor for market stability. The composite assessment of the “Infrastructure” block is 2.35 – among the lowest scores. Particularly problematic are the condition of the road network (2.32) and road–port integration (2.20); even the modernization of port facilities, recognized as important, receives a low score for current status (2.53). Priorities include: modernization and expansion of port infrastructure (storage and handling capacities, automation, operational efficiency of Black Sea terminals); integrated development of transport networks (improved road and rail connections, intermodal terminals for cargo transfer); digital coordination of logistics through electronic platforms for managing and tracking cargo flows; attracting public and private investments, including EU funds and public-private partnerships; and regional cooperation with integrated projects involving neighboring countries. These measures have a multiplying effect: lower transport costs, faster exports, reduced losses, and higher integration into global supply chains.

Financial support and insurance form the fourth strategic direction. The survey indicates dominance of own funds and bank credit, limited access to subsidies, and underdeveloped insurance mechanisms under high climate uncertainty. Priorities include: specialized credit products with flexible terms, adapted to seasonality and risk; modernized insurance schemes covering droughts, hail, floods, etc., with partial state/EU participation to reduce premiums; simplified procedures and informational support for participation in CAP/RDP programs; encouragement of cooperation and collective financing for investments in irrigation and equipment; and national/regional stabilization funds for price shocks and natural disasters.

Improving marketing and digitalization is the fifth strategic direction. Current scores are relatively low for CRM/ERP systems (2.98) and online presence (2.83), while awareness of international and regional price levels (3.30) and training of sales

personnel (3.28) are relatively higher; importance is clearly high for market awareness (4.18), commercial competencies (4.10), and computerized systems (3.77). Priorities include building a corporate online presence (multilingual websites, profiles on international platforms), implementing CRM/ERP systems for managing relationships and processes, targeted training in digital marketing and sales, as well as collective marketing platforms at the industry level.

Collaboration and coordination among participants constitute the sixth strategic direction, with a direct impact on sustainability and competitiveness. The composite assessment is 3.19 – indicating existing practices but substantial potential for improvement. The highest scores are observed for vertical cooperation (3.57); lower scores are given to horizontal collaboration among producers (3.38) and business participation in national consultative bodies (3.32); cooperation with the administration is weak (2.67). The perceived importance is high for both vertical (3.78) and horizontal links (3.77), as well as for improved dialogue with institutions (3.78). Priorities include promoting horizontal cooperation through producer organizations; strengthening vertical linkages and long-term contractual relationships; institutionalized dialogue through working groups and councils with real representation; and participation in networks and projects for knowledge and experience exchange.

The institutional and regulatory environment is the seventh strategic direction, determining the predictability and stability of the sector. State policy is assessed as inconsistent and insufficiently engaged, with an average score for policy consistency of only 2.28. Administrative influence is strong, characterized by bureaucratic obstacles and a lack of flexibility; there is a need for more transparent oversight of trade practices and limitation of oligopolistic structures. Priorities include: a long-term, consistent national strategy for the sector aligned with European frameworks; reduction of administrative burdens through digitalization and simplified procedures;

mechanisms for transparent monitoring and control of trade practices; better coordination between institutions and rapid crisis response measures; and an active role for municipalities and regions through infrastructure programs, consultations, and public-private partnerships.

In a synthesized form, the strategic directions are presented as an integrated strategic framework for the sustainable development of the grain market in Bulgaria. It unites the identified challenges and actionable opportunities at national, regional, sectoral, and corporate levels.

**Table 19**

**Strategic Framework for Sustainable Development of the Grain Market in Bulgaria:**

<b>№</b>	<b>Strategic Direction</b>	<b>Identified Challenges</b>	<b>Main Opportunities / Priority Actions</b>	<b>Level of Impact</b>
1	Adaptation to Climate Change and Sustainable Management of Natural Resources	Droughts, extreme weather events, insufficient irrigation infrastructure, low investment in crop breeding and monitoring	Modernization of irrigation systems; introduction of drought-resistant crop varieties; development of climate monitoring systems; long-term adaptation strategy	National and Regional
2	Technological Modernization and Human Capital Development	Limited adoption of automation and digitalization; shortage of qualified personnel; low energy efficiency	Investments in precision agriculture; development of processing capacities; establishment of training centers and demonstration farms; regulatory framework reforms	National and Corporate
3	Development of Transport and Port Infrastructure	Insufficient logistical connectivity; outdated port facilities; high transport costs	Modernization of ports and transport networks; construction of intermodal terminals; digitalization of logistics processes; regional connectivity projects	National and International
4	Financial Support and Insurance	Limited access to credit and subsidies for some groups of farms; lack of effective insurance mechanisms; high	Flexible credit lines; specialized insurance products; collective financing; stabilization funds; simplified CAP procedures	National and Corporate

<b>№</b>	<b>Strategic Direction</b>	<b>Identified Challenges</b>	<b>Main Opportunities / Priority Actions</b>	<b>Level of Impact</b>
		vulnerability to climate and price shocks		
5	Improving Marketing and Digitalization of the Sector	Weak online presence; limited use of CRM/ERP systems; shortage of digital specialists	Development of online channels; implementation of management software; training in digital marketing; establishment of collective marketing platforms	Corporate and Sectoral
6	Strengthening Collaboration and Coordination Among Participants	Fragmentation among producers and traders; lack of effective dialogue with institutions	Promotion of cooperation; vertical and horizontal partnerships; participation in advisory councils and international networks	Sectoral, National, and International
7	Institutional and Regulatory Environment	Inconsistent state policy; bureaucratic barriers; lack of oversight over oligopolistic structures	Long-term sector strategy; digitalization of administrative procedures; enhanced control of trade practices; transparency and coordination among institutions	National and European

In summary, the outlined strategic directions form a comprehensive framework for the sustainable development of the grain market. They simultaneously address structural weaknesses and opportunities for modernization and enhanced competitiveness. Implementation requires coordinated actions at the state, regional, sectoral, and corporate levels, integrated with the instruments of the Common Agricultural Policy (CAP). For sectoral organizations and cooperatives, these guidelines can serve as a reference for joint initiatives, knowledge exchange, and building stronger market positions. At the micro level, they support the formulation of strategies for adaptation, technological modernization, and market differentiation.

The dissertation's conclusion systematizes the main findings, reflecting the development of the research and the achieved scientific and practical results. The grain sector is established as strategic for food security, sustainable agricultural

development, and economic stability in Bulgaria and the Black Sea region. In the context of growing global interdependence, climate change, and geopolitical uncertainty, the sector functions as a key subsystem of the national economy, directly influencing the country's social and economic resilience.

During the research, an adapted methodology was developed and applied for a systemic assessment of grain market stability, integrating macro-environment analysis, Porter's competitive framework, surveys of market participants, and synthesis of strategic guidelines. This approach ensures consistency between theoretical frameworks and empirical observations and allows a comprehensive interpretation of market dependencies and trends.

The analysis indicates that market stability is relatively low (average score 2.89 on a five-point scale), with the main weaknesses concentrated in climatic and infrastructural factors. Production technologies receive intermediate scores, reflecting limited adoption of automation and digitalization, as well as a shortage of qualified personnel. Positive impacts are observed in marketing and collaboration, indicating potential for organizational and market strengthening. Competitive analysis reveals a moderately attractive sector, with key pressures arising from the bargaining power of clients and suppliers and the high capital intensity of production.

The research confirms the two initial hypotheses. The first is that the stability of the grain market depends on a complex set of international, national, and sectoral factors interacting in a dynamic environment. The second is that integrated strategic management and technological modernization can significantly enhance the sector's resilience and competitiveness.

Based on the empirical results, seven strategic directions for development have been formulated: Adaptation to climate change and sustainable management of natural resources; Technological modernization and human capital development;

Development of transport and port infrastructure; Financial support and insurance;

Improvement of marketing and digitalization; Strengthening collaboration and coordination among participants; Enhancement of the institutional and regulatory environment. These directions are designed in accordance with the identified weaknesses and opportunities, outlining an integrated strategic framework for the sustainable development of Bulgaria's grain market.

The dissertation contributes by developing a comprehensive analytical model for assessing market stability and by providing concrete recommendations for policy and managerial decisions. From a theoretical perspective, it establishes a methodological foundation for the study of agricultural markets under conditions of global change. From a practical perspective, it formulates actionable strategic guidelines for state institutions, sectoral organizations, and production structures. The grain sector is considered a system in transition—from an environment dominated by price pressures and structural constraints toward a model of sustainable and competitive development based on innovation, coordination, and strategic management. The implementation of the proposed guidelines represents a prerequisite for ensuring food security, enhancing economic resilience, and successfully integrating Bulgarian grain production into international markets.

#### **IV. LIST OF THE CONTRIBUTIONS OF THE DISSERTATION**

1. Existing theoretical models of competitiveness and sustainability have been systematized and adapted to the context of the agricultural economy, with a particular focus on grain production in Bulgaria and the Black Sea region.
2. A comprehensive theoretical and methodological framework has been developed for studying the stability of the grain market, integrating macro-environmental factor analysis, a survey of market participants' attitudes, competitive environment assessment, and formulation of strategic scenarios.
3. An empirical study was conducted among key market participants, summarizing their attitudes and perceptions regarding the stability of the sector in Bulgaria.
4. The stability of the grain market was evaluated using quantitative indicators, and composite indices were derived across key areas: climate and irrigation, technologies, infrastructure, marketing, and collaboration.
5. Strategic guidelines for future development were formulated in priority areas, with proposed procedural measures for each at different managerial levels.

## **V. LIST OF PUBLICATIONS RELATED TO THE DISSERTATION**

### **Articles**

Ivanova, D. Egyptian Grain Market and its Importance over the Bulgarian Production and Export of Agricultural Products. Izvestia Journal of the Union of Scientists - Varna. Economic Sciences Series, Varna: Union of Scientists - Varna, 10, 2021, 1, 23-28. DOI: <https://doi.org/10.36997/IJUSV-ESS/2021.10.1>

Stanimirova, M., Ivanova, D. A Methodological Approach to Grain Market Research in Bulgaria. Bulgarian Journal of Agricultural Science, Sofia: Agricultural Academy in Bulgaria, 29, 2023, Suppl. 1, 107-112. [https://journal.agrojournals.org/page/en/details.php?article\\_id=4496](https://journal.agrojournals.org/page/en/details.php?article_id=4496)

### **Conference Papers / Reports**

Ivanova, D. Challenges for the Wheat Market in the Black Sea Region under COVID-19 Conditions. [Electronic Resource] Agrobusiness and Rural Areas – Economy, Innovation and Growth: Collection of Papers: Jubilee Scientific-Practical Conference, 18 June 2021: online, Varna: Science and Economics, 2021, 144-151. DOI: <https://doi.org/10.36997/ARA2021>

Ivanova, D. Grain Market Obstacles within the Black Sea Region. Innovative Development of Agricultural Business and Rural Areas: [Conference Proceedings], Sofia: Publishing Complex – UNWE, 2022, 274-283. <https://idara.unwe.bg/Uploads/Conference/Conference%202022.pdf>

## **VI. DECLARATION OF ORIGINALITY**

I hereby declare that this dissertation is entirely my own work and that no external publications or developments have been used in violation of copyright laws in its preparation.