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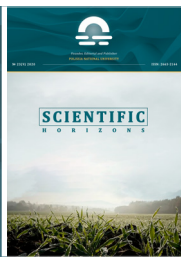

Ukraine's competitive position in international agricultural markets: Overcoming challenges and prospects

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Abstract. The agricultural sector continues to be a leader in the global market as an exporter of agricultural products, but the large-scale war in Ukraine and geo-economic challenges have substantially changed the priorities for choosing trade partners in export-import activities in a competitive environment. The purpose of this study was to analyse the possibility of maintaining the competitive position of Ukrainian agri-food products in the world commodity markets and to identify strategic alternative market segments of the agricultural sector through the lens of structural transformations in commodity exports. The study employed economic and

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statistical methods of research (for analysing the dynamics and structure of agricultural exports), the index method (for assessing the level of market monopolisation), analysis and synthesis, induction and deduction (for substantiating conclusions and proposals). It was found that competitive positions were strengthened in the structural transformation process through the development of new market segments. The study analysed the commodity and geographical structure of exports and the nature of changes in the choice of priorities and market concentration and found that the impact of negative factors objectively reoriented producers and intermediaries to the European market, strengthening the role of Eastern European countries. The study identified changes in competitive positions in the markets of grain, oilseeds, vegetable and animal fats, which allowed assessing the prospects for the recovery and retention of target agricultural markets. The dynamics of changes in the positions of importing countries showed new leaders in the import of agri-food products, including the top 5 countries: Romania, Turkey, Poland, China, and Spain. The study found that the primary consumers in the vegetable and animal fats market are India, Poland, Spain, and Romania; in the oilseeds market – Germany, Belgium, the Netherlands, and Egypt. The value of the Herfindahl–Hirschman index indicates that Ukraine has partially lost its competitive advantages in China, Egypt, and Israel due to increased market concentration. The proposals for strengthening competitive positions in international agricultural markets in the face of global risks are of practical significance. The findings of this study are recommended to be used at the state and local levels in determining the strategic areas of competition policy, which can be effectively implemented under conditions of subsidies and regulation of agricultural markets, cost and price advantages, compliance with quality and safety standards, compliance with the spatial location of agri-food segments, the ecological ability of agriculture to withstand climate change, and information provision of producers

Keywords: agricultural sector; international trade; comparative advantage; geographical structure of exports; commodity structure of exports; market concentration; agricultural products

INTRODUCTION

Ukraine's agriculture sector is highly rated in terms of the interaction of the most favourable factors influencing agricultural production and the function of guaranteed food security. Specifically, it has the most fertile land in the world (32.7 million ha) used for agricultural production; it has excellent natural and climatic conditions for the dominance of major export crops (grain and industrial); it continues to be a priority sector of the economy in terms of its contribution to the country's budget in the post-war period and maintains a favourable investment climate and innovation capacity. A prominent role in contributing to the Sustainable Development Goals is ensured by the social significance of the industry (employment level is 14% of the total number of employed), a considerable share in the country's GDP (10.9%), environmentally friendly climate change adaptability, and a strong level of land capital use as a mechanism for the functioning of the economic system overall (Albaladejo, 2024). Despite the scale of losses due to the war, which experts estimate at USD 49 bn, the agricultural sector demonstrates not only high resilience and adaptability to risks but also prioritises maintaining the competitive advantages of agri-food products on global commodity markets (Report on direct infrastructure… 2023). Such a strategic perspective of Ukraine is in line with modern theoretical and methodological concepts of competitive assessment of the agricultural sector's capabilities and the postulates of the theory of classical competition by M.E. Porter (1990), according to which no nation can be uncompetitive.

From the standpoint of agricultural sector competitiveness policy, there is a wide variety of scientific opinions on the analysis of the impact of factors on competitiveness. The EU competitive markets, which are regulated under the Common Agricultural Policy (n.d.), are viewed and formed through the lens of policy schemes and price models due to the existing subsidy rules. In contrast to the conventional findings, M. Graubner and R. Sexton (2023), who considered the key feature that distinguishes agricultural markets from other industries to be their spatial location, argued that the regional dimension is fundamental to determining prices and production volumes, as well as market competitiveness. The spatial dimension encourages producers to locate in the centres of their market areas, avoiding intense competition and minimising price competition. Analogous opinions on the market effects of different countries are typical for other researchers, for example, E. Bulte *et al.* (2024) noted the lack of competition in remote commodity markets and the low quality of supply from small owners. Therewith, an effective method of increasing competition could be to improve the contracting system, as well as to use a relational contract that enables the negotiation of crop prices and quality.

Compared to international competitiveness, the concept of international competitive position is much narrower: it is the state and changes in the share of a particular country in international trade, as well as the evolution of this turnover, including the corresponding transformation of quality. For agriculture, according to

a team of researchers, it is the skilful use of the natural comparative advantages of the respective countries (Jarosz-Angowska *et al.*, 2020). The topic of the correlation between competitive advantages and export performance is also developed by other researchers in their studies, coming to the general conclusion that export development is of great significance both at the macro and micro levels, as it contributes to the economic and social development of nations, increases productivity, creates jobs, and is an attractive way to enter international markets. According to O. Rua *et al.* (2018) and H. Keskin *et al.* (2021), export efficiency can be increased by the costs or benefits of differentiating competitive strategies and export opportunities. Accordingly, successful exports result from the efficient use of resources and capabilities, which ultimately creates a broad field for international competitiveness.

Thus, recognising that competitiveness in the trade flow is viewed as a clear position of a country in the global economy or the economy of a particular region, as well as its performance in foreign trade, and considering the specific features of Ukraine's integration into the single European market, the competitive position of Ukrainian agri-food producers requires constant monitoring and evaluation of opportunities and results in the light of both strengthening their positions and reorientation to more profitable export segments. According to Ł. Ambroziak *et al.* (2024), the evolution of the competitive advantages of manufacturers will largely depend on how long the war and the post-war reconstruction process will last. A major factor in shaping future comparative advantages will be the inflow of foreign capital and the pace of Ukraine's integration into the European single market. The purpose of this study was to substantiate the strategic areas of export commodity policy in the agricultural sector of Ukraine based on a comprehensive analysis of the impact of objective global factors and the consequences of the war on the change in geographical and commodity priorities in market conditions.

MATERIALS AND METHODS

The scientific hypothesis of the study assumed that structural transformations of agricultural exports and changes in Ukraine's competitive position in international agricultural markets are the product of the systemic impact of the consequences of military operations in the country (destruction of production potential, disruption of logistics chains and routes) and the competitive policy of the world's largest exporters. Confirmation of the hypothesis formed the analytical basis for identifying target regional and commodity segments of the agricultural market for Ukraine, key competitors, prospects, and risks for restoring and strengthening competitive positions in the global agricultural market. The research methodology was based on a two-stage analysis of Ukraine's agricultural exports (value dynamics – time series method; commodity and regional structure – structural grouping method) and national markets of the key importers of agricultural products from Ukraine in terms of key commodities (assessment of the level of market monopolisation by the Herfindahl-Hirschman index and concentration level). In assessing the level of monopolisation of markets in individual countries, the Herfindahl–Hirschman index was calculated using the following formula:

$$I_h = \Sigma x_i^2, \quad (1)$$

where I_h is the Herfindahl–Hirschman index; x_i is the is the share of the i^{th} importer in the total volume of imported products.

The index value below 1,000 reflects a low level of market monopolisation (high competition), from 1,000 to 1,800 – an average level of monopolisation (medium competition intensity), and above 1,800 – high market monopolisation. The analysis of market concentration was also based on the results of calculating the aggregate share of the largest importers – the level of concentration is optimal if one importer holds no more than 31% of the market; two importers – no more than 44% of the market; three importers – no more than 54% of the market; four importers – no more than 63% of the market. To achieve the objectives of the research, the study employed the following scientific methods: analysis and synthesis (to identify changes in Ukraine's competitive position in the international commodity markets of grains and oilseeds, vegetable and animal fats); induction and deduction (to identify Ukraine's key competitors in international markets, prospects for restoring and maintaining competitive positions). The systematic application of scientific methods helped to perform the research objectives, namely: to identify cost changes and structural transformations of agricultural exports from Ukraine; to assess Ukraine's competitive position in the target agricultural markets; to substantiate the prospects for their restoration and maintenance considering changes in the level of market concentration and the policies of major competitors.

The conclusions of the theoretical part of the study were based on a synthesis of the results of academic developments of Ukrainian scientists and researchers from Poland, Italy, Portugal, the USA, and China. The empirical research was conducted based on analytical data from the State Statistics Service of Ukraine (2024) and the State Customs Service of Ukraine (2024) (information on the value of exports of agricultural products from Ukraine by commodity groups and countries for 2013-2025) and the international database Trade Map (2024) (information on the value of imports of agricultural products to individual countries overall and by importers for 2019-2025, formed based on data provided by national statistics services). The use of analytical information from official sources proved the reliability of the study results.

RESULTS AND DISCUSSION

In the geo-economic system, Ukraine has always been positioned as a country with an agrarian economy. Extensive resource capacities and favourable agricultural land areas determined the need and potential for the development of the agricultural sector, which grew by 5-6% annually (Draft recovery plan for Ukraine, 2022). This growth was achieved through increased volumes and intensive technological upgrades. Ukraine's gradual integration into international economic integration processes contributed to its position in the global agricultural market. The military events in the east and south of Ukraine in 2014 also strengthened the agricultural vector of economic development and the country's foreign economic potential, which led to changes in the sectoral structure of exports. The share of agricultural products in the value of national exports increased from 26.8% in 2013 to 45% in 2020 (Fig. 1). Even despite the crisis in the national and global economy, agricultural exports grew positively, reaching a peak in 2019 and 2021 (19.0% and 24.9%, respectively).

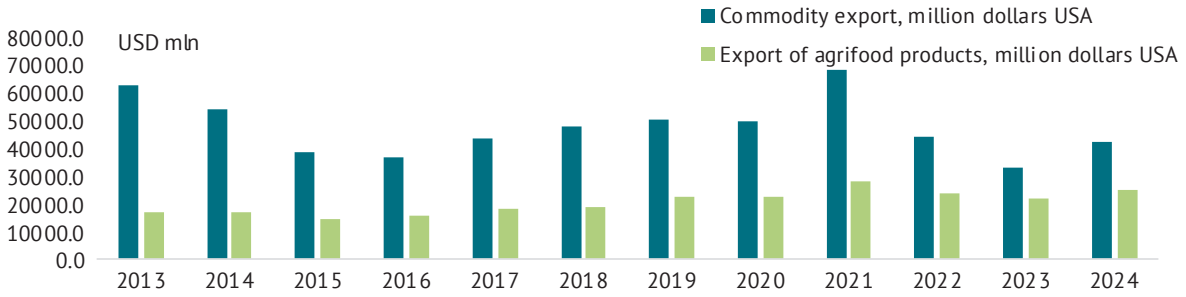

***Figure 1**. Dynamics of the value of Ukraine's exports of agricultural products, USD million*
***Source:** calculated by the authors of this study according to data from the State Statistics Service of Ukraine (2024)*

A critical factor for the development of the agricultural sector of the economy was the outbreak of full-scale military operations in Ukraine. The destruction of production facilities, occupation and mining of territories, and blocking of logistics corridors led to a decrease in the value of agricultural exports in 2022 to USD 23,390 mn (84.4% of 2021) (State Customs Service of Ukraine, 2024). In 2023, the rate of decline in the value of agricultural exports slowed down, with USD 22 bn worth of agri-food being supplied to the global market. This is a lower figure compared to 2021, although it is one of the largest in the last 30 years. Notably, the decline in global food prices was a major factor behind the decline in the value of agricultural exports from Ukraine, as exports of certain commodities increased markedly in physical terms (Pugachov, 2024). In 2024, the increase in the value of agricultural exports was already positive (12% compared to the previous year). Despite the negative trends in the value of agricultural exports, in 2022 the trend towards an increase in its share in national exports resumed. In 2023, it reached a record high of 60.8%.

The systemic effect of negative factors, with the most prominent impact of blocking international logistics routes, led to structural changes in agricultural exports from Ukraine. Specifically, the closure of access to the use of sea corridors, which were the primary channel for selling products to the south and east, forced producers and agro-traders to reorient themselves towards the European market. This led to considerable changes in the geographical structure of exports in favour of the EU countries (Fig. 2).

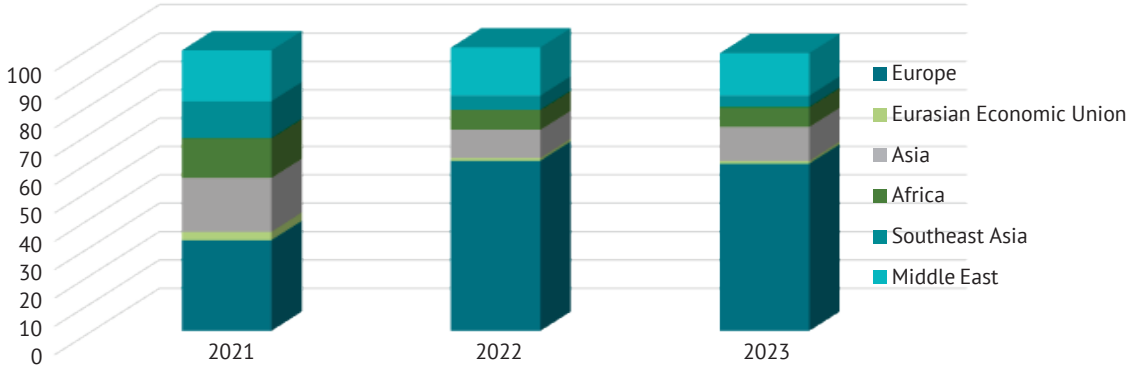

***Figure 2**. Regional structure of Ukraine's agricultural exports, %*
***Source:** calculated by the authors of this study according to data from the State Customs Service of Ukraine (2024)*

In terms of countries, Romania, Turkey, Poland, China, and Spain were the leaders in terms of the value of agricultural imports from Ukraine in 2022-2023 marketing year (Table 1). Within the EU, the vector of agricultural exports shifted towards Eastern European countries. The increase in the volume and share of exports to the EU in 2022 was made possible by the introduction of a 'trade visa-free regime' for agricultural products by the European Commission within the framework of its support for the Ukrainian economy. In 2023, to reduce further competitive pressure on the internal market and protect European farmers, the preferences were extended to limit imports of wheat, maize, soybeans, and sunflower to five EU countries. At the same time, the European Council developed mechanisms for close monitoring of the market situation and 'emergency braking' of imports, under which customs tariffs will be imposed on poultry, eggs, sugar, oats, cereals, maize, and honey within two weeks if imports of these products exceed the average imports recorded in the second half of 2021, as well as during 2022 and 2023 (Zanuda, 2024). The increase in the European market share came at the expense of a substantial reduction in supplies to the South and East in 2022: in the next marketing year, Ukraine's diplomatic efforts with the support of the EU managed to curb the rate of decline in exports to these regions. Accordingly, the geographical structure of agricultural exports has relatively stabilised. Changes in the geographical structure of agricultural exports from Ukraine, in line with the specifics of regional market demand, led to minor changes in the commodity structure of exports. The bulk of agricultural exports comprises cereals, vegetable and animal fats, oilseeds, and residues and waste from the food industry (Fig. 3).

***Table 1**. Dynamics of changes in the position of countries importing agricultural products from Ukraine*

Country	2020/21 marketing year		2022/23 marketing year	
	Cost, USD bn	Ranking	Cost, USD bn	Ranking
China	3.5	1	2.0	4
India	1.9	2	–	–
Netherlands	1.7	3	0.9	6
Egypt	1.6	4	–	–
Turkey	1.4	5	2.9	2
Spain	1.17	6	1.3	5
Poland	1.07	7	2.3	3
Germany	0.8	8	0.6	10
Indonesia	0.7	9	–	–
Romania	–	–	3.5	1
Bulgaria	–	–	0.8	8
Hungary	–	–	0.8	7
Italy	–	–	0.7	9

***Source:** calculated by the authors of this study according to data from Agricultural exports to the EU... (2024)*

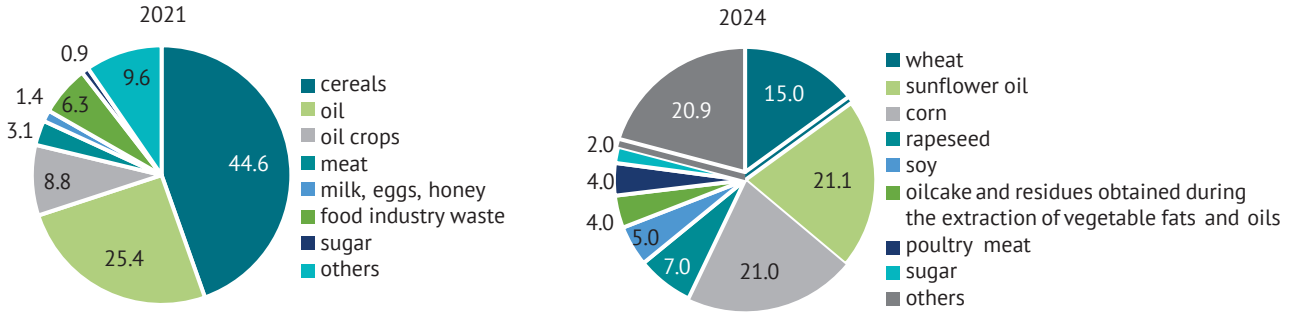

***Figure 3**. Commodity structure of Ukraine's agricultural exports, %*
***Source:** calculated by the authors of this study according to data from the State Customs Service of Ukraine (2024)*

It is the reorientation from the East and South to the European region that has led to a decrease in the share of grains to 37.8% and an increase in the share of oilseeds in the export structure. However, overall, the structure of exports to the EU is analogous to the national one, with 82% of exports of grains and oilseeds, oils and fats, and residues of the processing industry. In 2023, the European market stayed the primary market for a series of Ukrainian products: poultry meat (USD 407 mn, 51% of total exports of this type of agricultural product); eggs (USD 39 mn, 64%); egg products (USD 36 mn, 92%); wheat flour (USD 25 mn, 60%); starch (USD 19 mn, 51%); sugar, sugar confectionery (USD 487 mn, 82%); dough products (USD

43 mn, 81%); bakery products (USD 122 mn, 57%), etc. (In 2023, the volume of exports of Ukrainian agricultural products..., 2024).

To determine the vectors of further transformations of Ukraine's agricultural exports, the study analysed its subject structure and diagnosed the national markets of the key importers of agricultural products in terms of key commodities. Over 40% of Ukraine's agricultural exports in the pre-war period were accounted for by grain crops, which was driven by high demand and well-established logistics routes to the countries of the South (Egypt, China, Indonesia, Bangladesh, etc.). A significant share of grain was supplied to the European market (Table 2).

***Table 2**. Top 10 countries importing grain from Ukraine*

2019			2024			Change in the country's position in the ranking, 2024/2019, +/-
Ranking	Country	Cost, USD thsd	Ranking	Country	Cost, USD thsd	
1	Egypt	1,310,267	1	Spain	1,917,837	+2
2	China	858,653	2	Egypt	904,481	-1
3	Spain	764,825	3	China	765,175	-1
4	Turkey	718,407	4	Turkey	745,884	–
5	Netherlands	623,587	5	Italy	627,578	+5
6	Indonesia	537,479	6	Netherlands	543,000	-1
7	Bangladesh	420,308	7	Indonesia	480,194	-1
8	Israel	316,075	8	Tunisia	293,261	+1
9	Tunisia	292,515	9	Algeria	283,627	+5
10	Italy	282,683	10	Israel	250,015	-2

***Source:** calculated by the authors of this study according to data from Trade map (2024)*

The military invasion of Ukraine resulted in a substantial increase in the European market share. Specifically, in 2023, Romania (from 68th to 3rd position), Poland (from 41st to 8th position), and Hungary (from 57th to 9th position) entered the top 10 largest importers. In 2024, these countries decreased the volume of grain imports from Ukraine, while the share of Spain and Italy increased. In the markets of the Eastern countries, Ukraine lost some of its competitive advantage. The key reasons for this trend were the negative consequences of the military invasion of the country and the active and rather aggressive behaviour of competitors. The assessment of Ukraine's competitive position was based on the monitoring of the level of concentration (monopolisation) of the national commodity markets of the major importers of agricultural products from Ukraine. China has been one of the target grain markets for Ukraine in recent years. In 2019-2024, the country's grain market capacity increased by 4 times, which opened considerable prospects for agricultural importers. In 2024, the value of grain exports from Ukraine to China also increased (by 37.7%) to USD 1,495.4 mn but did not reach the pre-war level. According to the Herfindahl-Hirschman index, the Chinese grain market has an average concentration (the index is within 1,000-1,800) and did not undergo substantial changes in 2019-2024. The intensity of competition was medium – the total share of the 3 major importers was 54%. At the same time, the competitive ratio of the major grain importers changed. In 2024, Australia and Brazil, which had not been among the top 10 largest suppliers until present, moved into the top three in terms of import value. This led to a decline in Ukraine's position from 1st to 4th (Table 3).

***Table 3**. Concentration level of the Chinese grain market according to the Herfindahl-Hirschman index*

2019				2024			
Exporting country	Cost, USD thsd	x_i^*, %	$(x_i)^2$	Exporting country	Cost, USD thsd	x_i^*, %	$(x_i)^2$
Ukraine	1,085,913	21.48	461.50	Australia	3,211,665	21.68	469.94
Canada	904,516	17.89	320.19	USA	2,893,861	19.53	381.54
Australia	799,565	15.82	250.20	Brazil	1,887,665	12.74	162.34
France	413,520	8.18	66.92	Ukraine	1,495,405	10.09	101.88
Thailand	345,452	6.83	46.70	Canada	1,446,838	9.77	95.37
USA	274,826	5.44	29.56	France	1,266,756	8.55	73.11
Vietnam	240,743	4.76	22.68	Argentina	730,088	4.93	24.28
Myanmar	236,984	4.69	21.98	Russia	434,146	2.93	8.59
Pakistan	234,869	4.65	21.59	Myanmar	321,726	2.17	4.72

Table 3. Continued

2019				2024			
Exporting country	**Cost, USD thsd**	**x_i^*, %**	**$(x_i)^2$**	**Exporting country**	**Cost, USD thsd**	**x_i^*, %**	**$(x_i)^2$**
Cambodia	171,535	3.39	11.52	Kazakhstan	300,613	2.03	4.12
Others	346,964	6.87	–	Others	826,514	5.58	–
Total	5,054,887	100	***1,252.84***	Total	14,815,277	100	***1,325.88***

Note: *x_i is the share of i-country in the total value of imported products, %*
Source: *calculated by the authors of this study according to data from Trade map (2024)*

Egypt is the target market for Ukraine's grain crops. Its capacity has been growing over the years, but the volume of supplies from Ukraine has stayed virtually unchanged. At the same time, the value of the Egyptian market for Ukraine has declined. Calculations of the Herfindahl-Hirschman index show that the level of monopolisation of the Egyptian grain market in 2019-2023 is changing from high to medium. However, the level of market concentration by weight of the largest importers in 2023 is high – the share of two in the market capacity is 48.2% (the critical limit is 44%), three – 56.9% (with the limit of 54%), four – 64% (64%) (Table 4). The entity structure of imports did not change markedly during the study period. As a result of the externalities of the military invasion of Ukraine and certain geo-economic events, Ukraine is losing its competitive position in the markets of Indonesia, Israel, Bangladesh, and Tunisia, which were among the top 10 grain importers. According to the official statistics of Indonesia, the value of grain imports from Ukraine in 2019-2023 decreased threefold, which led to a decline in its place in the structure of major importers from the 3rd to the 9th position. However, in 2024, a major increase in the value of grain imports from Ukraine was recorded (to the level of 2019), and the country ranked 4th in terms of significance. Ukraine's market niche was partially replaced by supplies from Vietnam, Thailand, and Brazil. The level of concentration of the Indonesian grain market is low (994.17 in 2024), which indicates prospects for restoring Ukraine's competitive position.

Table 4*. Concentration level of the Egyptian grain market according to the Herfindahl-Hirschman index*

2019				2024			
Exporting country	**Cost, USD thsd**	**x_i^*, %**	**$(x_i)^2$**	**Exporting country**	**Cost, USD thsd**	**x_i^*, %**	**$(x_i)^2$**
Russia	1,435,472	27.39	750.10	Russia	2,554,686	30.76	945.88
Ukraine	1,362,523	26.00	675.80	Ukraine	1,448,293	17.44	304.00
Brazil	629,608	12.01	144.30	Brazil	726,095	8.74	76.41
Argentina	561,851	10.72	114.91	Romania	590,609	7.11	50.55
Romania	410,242	7.83	61.26	Argentina	522,675	6.29	39.59
USA	263,670	5.03	25.31	France	123,889	1.49	2.22
France	171,778	3.28	10.74	India	119,137	1.43	2.06
China	156,229	2.98	8.88	USA	60,368	0.73	0.53
India	95,731	1.83	3.34	Bulgaria	58,984	0.71	0.50
Poland	32,341	0.62	0.38	Turkey	54,051	0.65	0.42
Others	121,725	2.32	–	Others	2,047,746	4.65	–
Total	5,241,240	100	***1,795.04***	Total	8,306,533	100	***1,422.17***

Note: *$^*x_i$ is the share of i-country in the total value of imported products, %*
Source: *calculated by the authors of this study according to data from Trade map (2024)*

The Israeli grain market has a significantly lower capacity than China or Egypt and a prominent level of concentration (the Herfindahl-Hirschman index was 3,581.78 in 2024), which tends to grow dynamically. For a long time, Ukraine has been the primary supplier of grain to Israel (accounting for about 40% of imports). However, during the war period, the volume of grain supplies decreased by almost 40%, which led to a decline in the country's market share to 26.6%. Thailand, Australia, India, and Brazil became Ukraine's new competitors. Considering the situation, capacity, and level of monopolisation of the Israeli grain market, restoring and maintaining competitive positions for Ukraine will be a challenging task, which will become more problematic over the years. Tunisia is a promising market for Ukraine's grain exports, considering the dynamic growth of its capacity (by 2 times in 2019-2023). Grain supplies to this country stayed virtually unchanged in value terms during the period under study (about USD 300 mn). This ensured that Ukraine maintained its leading position in the structure of the largest importers. However, the positions of Ukraine's

key competitors – Russia (from 4% to 17% of the market), Romania (from 5% to 9%), Canada (from 3.5% to 11%), and Bulgaria (from 2% to 9%) – have markedly strengthened in the Tunisian market. This led to a substantial decrease in the level of concentration of the grain market from high to insignificant (the Herfindahl–Hirschman index decreased from 2,077 in 2019 to 1,057 in 2023), which is a positive development for Tunisia and a negative factor in the growth of competitive pressure for Ukraine (Table 2).

The logical induction of the results of the analysis of target markets for grain exports from Ukraine suggests that the negative consequences of the destruction of Ukraine's production, logistics, and export potential have led to the loss of competitive positions in the markets of the countries of the Eastern and Southern regions and a reorientation to the European market. The most active competitors for Ukraine in the markets of the East (China, Egypt, Israel) were Brazil, Russia, and Australia. In the countries of the South, the loss of Ukraine's market position is conditioned by competitive pressure from Russia and European countries. Ukraine is also a powerful player in the global market of fats of vegetable and animal origin, exporting products worth over USD 5 bn annually. The maximum volume of fat exports reached USD 7.04 bn in 2021 (Trade map, 2024). Ukraine supplies its products to the countries of the South and Europe. Therewith, the regional structure of fat exports has changed in recent years in favour of the EU countries (Table 5). In the pre-war period, the major target markets for Ukraine's fat exports were India and China. The markets of these countries have a high capacity, and therefore are promising, but Ukraine lost its leadership due to the destruction of established logistics routes (Table 6). Currently, the largest volumes of fat exports go to European countries.

***Table 5**. Top 10 importing countries of vegetable and animal fats from Ukraine*

2019			2024			Change in the country's position in the ranking, 2024/2019, +/-
Ranking	**Country**	**Cost, USD thsd**	**Ranking**	**Country**	**Cost, USD thsd**	
1	India	1,446,846	1	India	720,388	–
2	China	741,274	2	Poland	646,462	+5
3	Netherlands	457,986	3	Spain	617,000	-1
4	Spain	313,066	4	Romania	476,211	+71
5	Iraq	265,443	5	Netherlands	466,509	-2
6	Italy	263,809	6	Italy	429,848	–
7	Poland	171,353	7	Turkey	361,577	+16
8	France	99,371	8	Bulgaria	232,004	+22
9	United Kingdom	80,857	9	France	176,431	-1
10	Malaysia	75,694	10	China	155,453	-8

***Source:** calculated by the authors of this study according to data from Trade map (2024)*

***Table 6**. Concentration level of the Indian fat market according to the Herfindahl-Hirschman index*

2019				2024			
Exporting country	**Cost, USD thsd**	x_i^*, **%**	$(x_i)^2$	**Exporting country**	**Cost, USD thsd**	x_i^*, **%**	$(x_i)^2$
Indonesia	2,690,051	27.36	748.80	Indonesia	4,356,903	25.62	656.43
Malaysia	2,313,648	23.54	553.91	Malaysia	2,806,267	16.50	272.33
Argentina	1,789,781	18.21	331.47	Argentina	2,713,272	15.96	254.58
Ukraine	1,551,024	15.78	248.93	Russia	2,163,383	12.72	161.85
Nepal	251,906	2.56	6.57	Ukraine	834,628	4.91	24.09
Singapore	250,966	2.55	6.52	Thailand	776,806	4.57	20.87
Brazil	226,175	2.30	5.29	Brazil	747,898	4.40	19.34
Switzerland	202,899	2.06	4.26	Singapore	630,007	3.70	13.73
Russia	157,498	1.60	2.57	Romania	393,626	2.31	5.36
Bangladesh	91,823	0.93	0.87	Netherlands	298,048	1.75	3.07
Others	304,780	3.11	–	Others	1,283,894	7.55	–
Total	9,830,551	100	***1,909.19***	Total	17,005,225	100	***1,431.64***

***Note:** $^*x_i$ is the share of i-country in the total value of imported products, %*
***Source:** calculated by the authors of this study according to data from Trade map (2024)*

The Indian fat market has an average level of concentration (according to the Herfindahl-Hirschman index), which tended to decline slightly in 2019-2024. Ukraine's share in the import structure decreased

threefold to 4.91% due to internal events and growing competitive pressure. New powerful competitors for Ukraine are Russia, Thailand, and Brazil, which have extensively strengthened their market positions. The second most significant target market for Ukraine for vegetable and animal fats is China, which has a high level of monopolisation both in terms of the Herfindahl-Hirschman index and market shares of major importers that exceed critical values (Table 7). Ukraine's share in the Chinese market in 2019-2024 decreased by 5%, which was the result of a halving of the cost of supplies from Ukraine, increased competitive pressure from Russia, whose supplies increased 4 times, and India.

***Table 7**. Concentration level of the Chinese fat market according to the Herfindahl-Hirschman index*

2019				2024			
Exporting country	**Cost, USD thsd**	**x_i^*, %**	**$(x_i)^2$**	**Exporting country**	**Cost, USD thsd**	**x_i^*, %**	**$(x_i)^2$**
Indonesia	3,951,225	39.78	1,582.29	Indonesia	5,207,932	41.27	1,702.84
Malaysia	1,500,675	15.11	228.24	Russia	1,907,865	15.12	228.53
Ukraine	806,591	8.12	65.94	Malaysia	1,590,034	12.60	158.73
Canada	796,383	8.02	64.28	India	867,914	6.88	47.29
Russia	494,314	4.98	24.76	Ukraine	398,886	3.16	9.99
India	407,056	4.10	16.79	United Arab Emirates	317,873	2.52	6.34
Argentina	355,817	3.58	12.83	Brazil	293,646	2.33	5.41
Brazil	291,931	2.94	8.64	Australia	251,121	1.99	3.96
Australia	214,348	2.16	4.66	Belarus	239,901	1.90	3.61
Spain	174,277	1.75	3.08	Spain	237,800	1.88	3.55
Others	940,585		–	Others	1,307,489	41.27	1,702.84
Total	9,933,202	100	***2,011.50***	Total	12,620,554	100	***2,170.26***

Note: *$^*x_i$ is the share of i-country in the total value of imported products, %*
Source: *calculated by the authors of this study according to data from Trade map (2024)*

Oilseeds occupy the third position in the commodity structure of Ukraine's agricultural exports, with high sales volumes even under challenging conditions of military influence (USD 3.36 bn in 2024). The primary consumers of Ukrainian products in this commodity group are invariably the EU countries, Turkey, and Egypt (Table 8). Among the EU countries, Romania's position in terms of imports of fats and oilseeds from Ukraine has strengthened the most. Pakistan entered the top ten importers for the first time.

***Table 8**. Top 10 countries importing oilseeds from Ukraine*

2019			2024			Change in the country's position in the ranking, 2023/2019, +/-
Ranking	**Country**	**Cost, USD thsd**	**Ranking**	**Country**	**Cost, USD thsd**	
1	Germany	483,620	1	Germany	789,072	-
2	Turkey	467,044	2	Belgium	483,737	+1
3	Belgium	340,603	3	Netherlands	426,351	+2
4	Egypt	229,732	4	Egypt	314,296	–
5	Netherlands	178,043	5	Turkey	262,577	-4
6	France	170,607	6	United Kingdom	172,189	+13
7	Belarus	138,906	7	France	157,382	-1
8	Poland	99,890	8	Pakistan	122,498	+116
9	Italy	69,900	9	Poland	77,033	+1
10	Greece	56,521	10	Greece	76,506	–

Source: *calculated by the authors of this study according to data from Trade map (2024)*

The evolution of researchers' opinions and the results of studies by A. Jarosz-Angowska *et al.* (2020), M. Graubner and R. Sexton (2023) have been proving over many years that the place of the agricultural sector in international trade continues to be global and attractive for investment, and that competition policies vary by country. Therewith, for countries to take advantage of new opportunities in international trade, they must have knowledge of the regulatory framework of importing countries, follow agri-food standards and other rules of coordination with trading partners, which positively influences the development of an effective export policy and its increase in the future. Summarising the findings obtained, it can be argued that Ukraine

has weakened its competitive position in the key segments of the global agricultural market. At the same time, there has been a reorientation of Ukrainian exports from the East and South to the West, particularly the EU. One of the major factors behind the preservation of Ukraine's agricultural export potential is the increase in supplies to EU member states due to the introduction of a preferential trade regime.

The loss of positions in the grain market is largely conditioned by competitive pressure from Brazil and Russia in the markets of the East (China, Egypt, Israel), Russia and Europe in the countries of the South. However, China and Egypt continue to be promising target markets for Ukraine as their capacity is growing dynamically. Competitive positions on the markets of Indonesia, Israel, Bangladesh, and Tunisia, which were among the top 10 grain importers from Ukraine, will be more challenging to restore, considering their low capacity and high concentration. Highly capacious markets for vegetable and animal fats (China, India) are highly concentrated, which, in the face of aggressive policies of competitors (Russia and Brazil), increases the risks of maintaining and restoring market positions for Ukraine.

To restore and maintain competitive positions in the global commodity market for agricultural products, Ukrainian producers should focus on quality and reorientation to products with higher added value. Analogous recommendations were outlined in the studies of some Ukrainian researchers who noted that a comprehensive approach to ensuring competitiveness in wartime requires rapid adaptation to changes in the global market, as military conflict disrupts the conventional environment, increases risks, and at the same time creates new opportunities (Volkova *et al.,* 2023). It is quality that is becoming the key factor that stabilises and increases the competitiveness of the agricultural sector and the national economy overall. Improving the quality of agricultural products, e.g., with a focus on organic production, is becoming a popular trend in the European and global markets, which strengthens competitive positions in agricultural segments. An example of the country's potential success in the struggle for better sales conditions may be the use of such a comparative advantage as the export of organic agri-food products. For instance, K. Boys *et al.* (2022) analysed and considered the organic agribusiness of the United States in terms of a promising trade tool and potential market opportunities for the country in a competitive market environment with many countries and a wide variety of products of organic origin. Furthermore, the organic farming model provides environmental benefits, stimulates sustainable agricultural development and economic growth without harming the environment and society, influences market demand, and regulates the clear definition of consumer demands based on continuous analysis of competitors or customer preferences (Dudar, 2019). As a complement to measures to strengthen competitive advantages in agriculture, it is proposed to factor in and implement international practices of effective public policy, develop cooperatives to reduce the monopolistic pressure of large enterprises, increase the product range, develop niche market segments, and apply processes to optimise production processes (Revenko *et al.,* 2024). The diversification contributes to strengthening the position of Ukrainian agricultural producers in global commodity markets, as the production of monocultures in agriculture and the maintenance of narrow specialisation has led to the decline of the livestock industry and other labour-intensive sectors, as well as critical social consequences, such as reduced employment of the rural population, increased migration, and depopulation of rural areas (Luzan *et al.,* 2025).

The generation of added value is directly reflected in the upward change in the export price of goods. Agricultural products of adequate quality and with a high degree of processing contribute significantly to employment and value added, thereby generating positive economic and social effects in terms of reputation, tourist attraction and environmental protection. Product quality is a motivating factor and a crucial element of a company's success in the international market. Improving the quality of exported products, according to Chinese researchers, is a prerequisite for economic growth, especially for developing countries, which often have a comparative advantage in the agri-food sector (Wang *et al.,* 2023). The key steps that will ensure the competitive position of Ukrainian agri-food products on the global market in the future should also include increasing the level of public investment in the development of the agricultural sector, integrating Ukraine's legislation into the EU in the context of quality standards for agricultural production, strengthening environmental requirements, etc. Other researchers also reached analogous conclusions (Kvasha *et al.,* 2024), arguing that these measures are significant both at the national and global levels and act as a certain guarantee of the country's food and national security in the context of a full-scale war.

CONCLUSIONS

The high productivity of agriculture shapes Ukraine's competitive position in the global agri-food market. The current trend in the development of Ukraine's agricultural sector is determined by the strengthening of its role in the integration into the global and European single market, as evidenced by the growing share of national exports, which reached 60% in 2023. The new format of international trade ties simultaneously serves as a driver for mitigating the consequences of the devastation and counteracting the challenges of globalisation. Despite the substantial externalities caused by the large-scale war, Ukraine's agricultural sector proved to be relatively resilient and showed strong results in

food production and exports. Thus, in 2024, agricultural exports totalled USD 24.7 bn, supporting food security and the export potential of the national economy. Compensation for the loss of areas suitable for growing agricultural products by increasing production volumes, strengthening the export orientation of the agricultural sector, and the results of diplomatic efforts helped to maintain Ukraine's position in the global agri-food market. The identified changes in the commodity and geographical structure of agricultural exports are interdependent and resulted from internal factors and active competitive policy of agricultural exporting countries.

The export potential is based on the competitive advantages of conventional types of agri-food products (grains, oilseeds, vegetable, and animal fats). The commodity structure of agricultural exports is determined by the geography of export flows, which has been changing as a result of the large-scale war. Specifically, in the pre-war period, China, India, the Netherlands, and Egypt were the leading countries in terms of Ukrainian agricultural imports, while in 2023 the situation changed towards Romania, Turkey, Poland, and China. Accordingly, the markets of these countries will determine the future prospects for export orientation, but at the same time, the requirements for products will increase, especially in terms of quality and added value of agri-food products.

In 2019-2024, Ukraine demonstrated a weakening of its competitive position in the main segments of the global agricultural market, which is confirmed by the diagnostics of the national markets of the main importers of agricultural products in terms of key commodities. Thus, in the Chinese grain market, the country moved from 1st to 4th place with a change in share from 21.5% to 10.1%; in the Indian fat market, from 4th to 5th place with a change in share from 15.8% to 4.9%. Notably, in 2024 the situation improved slightly compared to 2023. The loss of positions in the grain market is largely driven by competitive pressure from Brazil and Russia in the markets of the East (China, Egypt, Israel), Russia, and Europe in the countries of the South. However, China and Egypt continue to be promising target markets for Ukraine, as their capacity is growing dynamically. The capacity of China's grain market increased almost 3 times, reaching USD 14.8 bn, and that of Egypt – 1.5 times, reaching USD 8.3 bn.

Competitive positions in the markets of Indonesia, Israel, Bangladesh, and Tunisia, which were among the top 10 grain importers from Ukraine, will be more difficult to regain, considering their low capacity and high concentration. High-capacity vegetable and animal fats markets (China, India) are highly concentrated. Specifically, the Indian fat market, with a capacity of USD 17 bn, is characterised by a concentration level of 1,431, which is greater than the average. In the context of aggressive policies of competitors (Russia and Brazil), the prominent level of market concentration creates further risks for Ukraine to maintain and restore its competitive position. Promising areas for further research will be transformational changes in the conjuncture of high-capacity foreign agri-food markets, the nature of which will increasingly be influenced not only by economic levers but also by political decisions of the world's leading countries. At the same time, a large-scale war gives Ukraine a chance and incentive to explore new product and geographical niches of the global agricultural market, which requires scientific support for relevant management decisions on possible international market expansion.

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CONFLICT OF INTEREST

The authors of this study declare no conflict of interest.

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Конкурентні позиції України на міжнародних аграрних ринках: подолання викликів та перспективи

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Анотація. Аграрний сектор залишається лідером на світовому ринку як експортер сільськогосподарської продукції, але широкомасштабна війна в Україні і геоекономічні виклики суттєво змінили пріоритети вибору торговельних партнерів в експортно-імпортній діяльності в конкурентному середовищі. Мета статті полягала в аналізі можливості утримання конкурентних позицій української агропродовольчої продукції на світових товарних ринках та визначити стратегічні альтернативні ринкові сегменти аграрного сектора через призму структурних трансформацій в товарному експорті. Використано економіко-статистичні методи дослідження (при аналізі динаміки та структури аграрного експорту), індексний метод (для оцінки рівня монополізації ринків), аналізу і синтезу, індукції і дедукції (обґрунтування висновків і пропозицій). Було досліджено, що в процесі структурних трансформацій, конкурентні позиції зміцнилися через освоєння нових сегментів ринків. Було проаналізовано товарну та географічну структуру експорту й характер змін у виборі пріоритетів та концентрації ринків та встановлено, що дії негативних чинників об'єктивно переорієнтували виробників та посередників на європейський ринок, посилюючи роль країн Східної Європи. Було проведено ідентифікацію змін конкурентних позицій на ринках зерна, олійних культур, жирів рослинного та тваринного походження, що дозволило оцінити перспективи відновлення та утримання цільових аграрних ринків. Динаміка у змінах позицій країн-імпортерів показала нових лідерів в імпорті агропродовольчої продукції, серед яких 5-ТОП країн: Румунія, Туреччина, Польща, Китай, Іспанія. Виявлено, що основними споживачами на ринку жирів рослинного і тваринного походження є Індія, Польща, Іспанія, Румунія; на ринку олійних культур – Німеччина, Бельгія, Нідерланди, Єгипет. Значення індексу Харфіндела-Хіршмана свідчить, що Україна частково втратила конкурентні переваги в Китаї, Єгипті, Ізраїлі внаслідок підвищення рівня концентрації ринків. Практичного значення набувають пропозиції щодо укріплення конкурентних позицій на міжнародних аграрних ринках в умовах глобальних ризиків. Результати дослідження рекомендовано використовувати на державному та локальному рівнях при визначенні стратегічних напрямів конкурентної політики, яка може ефективно реалізовуватися за умов субсидування та регулювання аграрних ринків, переваг у витратах і цінах, відповідності стандартам якості і безпеки, дотримання просторового розміщення сегментів агропродовольчого товару, екологічної здатності сільського господарства протистояти змінам клімату, інформаційної забезпеченості товаровиробників

Ключові слова: аграрний сектор; міжнародна торгівля; порівняльна перевага; географічна структура експорту; товарна структура експорту; концентрація ринку; сільськогосподарська продукція