

INNOVATIVE TRADING APPROACHES IN CONDITIONS OF GRAIN MARKET VOLATILITY

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Over the last decade, Ukraine has significantly increased the volume of grain exports. In the 2019-2020 marketing year, in terms of export volume of all grain crops, Ukraine became the second exporter in the world after the USA [Skoromna O. et al, 2021]. And for the 2020-21 marketing year, 50,8 million tons of domestic grain were exported to foreign markets. Revenue from the export of Ukrainian grain in 2021 amounted to \$12,3 billion. Compared to 2020, there was an increase in the volume of deliveries of most of the main product items of this group. Thus, 24.7 million tons of corn grain were exported - 12% less than the 2020 figure of 27,9 million tons, but 6 times more than the result of 2010. Export volumes of wheat grain amounted to 20.1 million tons. This is by 11% more than in 2020, and more than 4 times higher than in 2010 (Mukha, M. et al, 2022).

And the growth of grain exports continued in the 2021-22 marketing year: as of February 23, Ukraine exported 43 million tons of grain and legumes. Of these, the largest exports were corn grain – almost 3,5 million tons and wheat grain – 0,9 million tons. Such data are provided by the Ministry of Agrarian Policy. Before Russia's attack on our country, the main volumes of grain exports in Ukraine were sent to buyers through the ports of Mykolaiv and through the ports of Southern Odesa and Chornomorsk. In total, this is 95% of grain cargoes exported by sea. Mariupol and Berdyansk accounted for another 5%. For the most part, grain was transported to the ports by rail (Mucha M., et al., 2022).

Until February 24, almost all Ukrainian agricultural exports, which are one of the main vessels of the circulatory system of our economy, were directed to Ukrainian seaports, mainly to the Black Sea. However, for today the sea ports are closed for us. They are either occupied or mined (Makovey Yu et al., 2022). Due to objective reasons, the export of Ukrainian grain is now significantly complicated and a number of problems have arisen that remain insufficiently researched to this day, which determined the relevance and purpose of the article.

The export of grain crops performs an extremely important function of preserving the country's positive trade balance and reducing the risks of foreign economic activity, while traditional export industries (metallurgical, chemical) experience a negative impact from the world market. Ukraine occupies a prominent place among the grain-exporting countries in the world, especially wheat grain and corn grain, and military actions prevent the implementation of foreign economic trade in grain and provoke the global food crisis (Dorofeev O. et al., 2020).

Currently, a difficult and unprecedented situation has developed, which has shaken the world economic balance and has had a significant impact on the international grain market and on the food security of many countries of the world. As a result of Russian aggression, part of the country's territory was under occupation, and the ports in the Black Sea area were blocked. This led to the fact that the establishment of new grain supply channels to buyers became the main problem of

grain export from Ukraine. In this direction, a number of measures have already been taken that have had a positive effect, in particular:

- export routes have been changed. Transportation of grain by rail across the land borders of Ukraine has been established. And although this way has many problems, the mechanism is being worked out and the efficiency of such export channels is increasing. European partners should also be thanked for this, in particular, for the fact that, despite the European bureaucracy, they make a concession in quantum leaps and liberalize everything possible. Transportation through river ports is also carried out and gradually improved. But so far this is not enough, because today there are still long queues and traffic jams at European borders and in river ports.

- document processing procedures have been simplified. A simplified customs clearance mechanism is being developed for exporters of Ukrainian grain. In particular, Poland has decided to temporarily not carry out veterinary control of plant-based fodder (in particular, fodder grain cargoes) during transit through its territory to third countries, which will allow Ukraine to export agricultural crops through the Rava-Ruska – Verkhvata border crossing. The corresponding simplified grain export regime began to operate on May 31, Valery Tkachev, deputy director of the commercial work department of JSC “Ukrzaliznytsia” wrote on Facebook. “This means that such cargoes can be imported into Poland through any checkpoints – both rail and land. This will make it possible to increase the export of grain from Ukraine!”, he noted [Petrenko, O., et al., 2019].

- grain storage opportunities have been expanded by upgrading elevator capacities in neighboring countries. Since the demand for granaries has increased, objects are put up for sale that no one needed before the all-out invasion. According to the commercial director of BZK Grain Alliance, Tair Musaev, the starting price for elevators that are 10-15 years old is from €130 to €250 per ton of storage. The Grain Alliance concern has already purchased an elevator in Slovakia equipped with two railway tracks. The work is being adjusted by Ukrainian workers, the elevator has already started receiving grain for storage (Mucha M., et al., 2022).

- construction/creation of new elevator capacities for storage of temporary grain residues, as well as new harvest (Chernyavskiy I., et al., 2019). Ukraine is already preparing additional facilities for storing agricultural crops of past and current harvests in case the blockade of its maritime infrastructure by Russian ships does not end.

All these measures bring positive results, which is confirmed by the growing volume of grain exports. In March 2022, 200,000 tons of grain were exported, and in April the volume of exports increased, of which about 150,000 tons were transported by rail. In April, this number increased more than 2 times, and in May - 3 times. Thus, during the war, the country was able to export more than 3 million tons of agricultural products, mainly thanks to the railway, but there is a rapid increase in the share of exports through river ports as Maxigrain business development manager Olena Neroba notes (Makovey Yu., 2022). According to Taras Vysotskyi, the First Deputy Minister of Agricultural Policy and Food of Ukraine, in May it was possible to reach the figure of 1,7 million tons by reorienting to railway and river transport, but this is not enough. Because before the start of the full-scale war, Ukraine exported about 5 million tons of grain every month through its seaports (Vysotsky T., 2022).

According to him, the active participation of Europe in increasing the volumes that Ukraine delivers by rail and road transport to the ports of Romania, Poland and the Baltic states will partly help to solve the problems. At the same time, it is important to increase the number of heavy cargo checkpoints and to introduce a "permit-free regime" by EU countries. However, despite the increase in volumes, without unlocking its seaports, Ukraine will not be able to reach pre-war indicators in the near future, Vysotsky is convinced (Skoromna O., 2022).

At the same time, domestic wheat grain and corn grain prices may rise due to increased transport costs, although as of May 23, 2022, their price is the lowest among the main exporters (Table 1).

**Table 1 – Dynamics of world wheat grain and corn grain prices
as of May 23, 2022 (USD/t)**

	Price (\$/t)	+/- Week	+/- Month
Wheat grain			
FOB Rouen, France	448	+18	NC
FOB Novorossiysk, Russia (12,5 %)	NC	NC	NC
HRW 10% US Gulf	519	-9	+40
FOB Odessa, Ukraine (11,5 %)	308	+4	-13
FOB Argentine, Up River (11,5 %)	449	+3	+39
Corn grain			
FOB Bordeaux, France	387	+7	+17
FOB US Gulf, USA	347	-2	-8
FOB Ukraine	288	+1	-4
FOB Argentina	308	+2	-5

Thus, the growth in the price of forward contracts for common small-grained wheat on free-on-board terms (Free on Board, hereinafter - FOB) from the port of Rouen (France) increased by \$18 in a week and reached \$448 per ton of wheat. Regarding the prices of common wheat (12,5%) according to FOB Novorossiysk (Russia) contracts, there is still no data. The price of hard red winter wheat (Hard Red Winter, hereinafter – HRW) min. 10% on FOB terms in US ports, Gulf District was 519 USD/t. During the week from May 16 to 22, the price decreased by 9 USD/t, but compared to the price on April 23, it increased by 40 USD/t. The price of Ukrainian wheat grain in the port of Odesa increased slightly over the previous week, but due to the impossibility of exporting it through the Black Sea, the price dynamics for the month is negative – it decreased by 13 USD/t. Common wheat grain under contracts FOB Argentina, Up River (11,5%) also increased significantly in price: in a month by 39 USD/t, and in a week – by 3 USD/t. Ukrainian wheat grain is the cheapest in terms of prices, so importing countries are now very interested in creating conditions for

unblocking ports and supplying Ukrainian grain to countries that need it. It is worth saying that the main grain exporting countries are currently in a more advantageous position than Ukraine and will seek to sell as much of their own grain as possible at inflated prices, and only then, in order to prevent famine in third world countries, can they take steps to guarantee the export of grain from blocked Ukrainian ports (Skoromna O., 2022).

According to the experts of the Ukrainian Grain Association (hereinafter – UGA), “the export of corn from Ukraine in the 2021-2022 MY was expected at the level of 30-32 million tons with a harvest of about 38 million tons. There are still 14-15 million tons of corn in the remains. Export is the income of farmers, including funds for sowing, and it is also the foreign currency income that Ukraine so desperately needs today”, UGA experts emphasized (Babenko, M., et al., 2022). Ukraine loses 1,5 billion dollars every month due to blocking of sea ports. In addition, Ukrainian elevators, which were not affected by hostilities, are overfull. Farmers have nowhere to store the next harvest, the harvest of which will begin at the end of June. To understand the scope of the possible food crisis, it should be noted that Ukraine is among the top three world leaders in food production and export. In addition to herself, she fed another 400 million people a year and made plans to increase their number to 1 billion within 10 years (Vysotsky T., et al., 2022).

With regard to corn grain, it should be emphasized that Ukraine has not been the first year to occupy a leading position in the cultivation of this crop, in the 2021-22 marketing year it is in fifth place in terms of production volume (forecast for 2022-23 MY – 8th place) and fourth place in terms of export of corn grain. At the same time, we see that the price of Ukrainian corn grain for the 2021 harvest is the lowest and as of May 23 was 288 USD/t. The next in the order of price growth is Argentina with a corn offer at the level of 308 USD/t. The FOB delivery price of American wheat (Gulf of Mexico) is 347 USD/t, FOB Bordeaux, France – 387 USD/t.

According to the Agritel company, the most forecasted (and most pessimistic) scenario for the export of Ukrainian corn grain is the volume of 10 million tons (Fig. 1).



Fig. 1. Dynamics of corn grain exports in Ukraine, million tons and export forecast for the 22-23 marketing year

Source: [20].

However, according to the experts of the Agritel company, it will be difficult for Ukraine to export even these 10 million tons, but this largely depends on the end of the war. According to an optimistic forecast, in the 2022-23 marketing year, Ukraine will be able to reach the maximum export of 29,6 billion tons of corn grain. Everything depends on how quickly Ukraine reorients itself to new logistical routes for the export of corn and whether it will be able to ensure its temporary storage for a certain period of time, necessary for going through bureaucratic procedures when crossing the border with the EU.

However, not only bureaucratic obstacles stand in the way of export reorientation. According to the business development manager of the Maxigrain company Olena Neroba, the following problems are acutely emerging: 1) there is no place to store batches at the borders 2) neighboring countries have nothing to transport them. It takes time to establish such supplies (Makovey Yu., et al., 2022).

There are also objective restrictions that significantly affect the export possibilities of Ukrainian grain. They are caused, among other things, by the different width of tracks in Ukraine and the EU, which requires unloading-loading procedures for the possibility of further transportation of goods. Over time, a number of steps will be taken to overcome this restraining factor, but in the coming months it is unlikely to radically change the situation by switching to a narrower track width (as in the EU).

Another objective limitation is that Russian forces continue to launch missile attacks in Ukraine on railway junctions, elevators, fertilizer warehouses, agricultural lands and infrastructure. According to the Minister of Agriculture of the Federal Republic of Germany, Cem Özdemir these strikes are most likely an attempt by Russia to eliminate Ukraine as a competitor on the grain market in the long term .

According to the estimates of the US Department of Agriculture, for the 2022-2023 marketing year in Ukraine, the production and export of the main types of agricultural products will be as follows (Table 2).

Table 2 – Production and export of the main types of agricultural products in Ukraine for the 2022-2023 marketing year, billion tons

Product Type	Production			Export		
	Amount, billion tons	Rank among world manufacturers	% of the volume of world production	Amount, billion tons	Rank among world exporters	% of the volume of world exports
Wheat grain	21,5	# 9	2,8 %	10,0	# 7	4,8 %
Corn grain	19,5	# 8	1,7 %	9,0	# 4	4,9 %
Sunflower	11,0	# 2	21,7 %	0,75	# 1	20,1 %
Barley	6,0	# 7	4,0 %	2,0	# 6	6,4 %
Sunflower oil	4,193	# 2	21,9 %	3,8	# 1	36,3 %
Sunflower cake	4,027	# 3	19,4 %	2,9	# 1	41,5 %
Rapeseed seeds	3,2	# 6	4,0 %	2,75	# 3	16,6 %

Source: [21, 22] USDA WASDE and PSD Database, Updated May 12, 2022

In terms of wheat production, according to USDA forecasts, in the 2022-23 marketing year, Ukraine will rank 9th in the world, as well as 7th among exporting countries [22]. After all, in the current year, wheat grains were produced in the amount of 21,5 billion tons, of which 10.0 billion tons were destined for export. In percentage terms, this is 4,8% of the world export volume. A prominent place among cereals

belongs to corn for grain, the production of which reached 19,5 billion tons, which is 1,7% of the world production volume. At the same time, Ukraine ranked 4th among corn exporters, with a volume of 9,0 billion tons, which is 4,9% of world exports. As for sunflower, Ukraine ranks second in the world in its production and first in export. And the production of sunflower oil is 21,9% of the world volume of production and covers 36,3% of world exports. And this is not the limit of the possibilities of Ukrainian agrarian business [21].

Despite all the troubles in the fiscal and budgetary regulation and despite the active phase of hostilities, Ukraine was and remains a significant supplier of food in the world and actively influences the world's global processes. Let us consider what share Ukraine occupies in world wheat imports (Table 3).

Table 3 – Share of exporting countries in world wheat imports, %

Importing countries	Exporting countries				USDA-estimated total imports 22-23
	France	The rest of the EU	Ukraine	Other countries	
Algeria	58	29	1	10	6,8
Morocco	37	17	25	13	6,0
Africa	20	17	9	18	12,0
Egypt	4	14	22	5	11,0
Tunisia/Libya	3	23	59	0	2,7
Cuba	58	27	0	15	0,8
Yemen	3	2	21	48	3,7
S/W Asia	0	4	16	72	44,9
Switzerland	26	55	1	2	0,5
Israel	1	40	24	6	1,8
Mexico	1	0	3	91	5,2
Turkey	0	9	13	1	9,5
Saudi Arabia	1	71	7	13	3,0
China	21	2	0	76	9,5

Countries such as Morocco, Egypt, Tunisia, Libya, Yemen and Israel import more than 20% of the world's wheat imports from Ukraine. Therefore, the decrease in

the supply of wheat grain from Ukraine due to the blockade of the Black Sea ports by Russian warships greatly affects global trade.

Of course, new realities have challenged Ukrainian food exports, but despite all the difficulties, alternative routes are working. According to the data of the joint project of Latifundist.com and Ukrzaliznytsia (hereinafter - UZ), as of May 22, 2020, UZ transported 566,7 thousand tons of grain for export. In April, the total volume of transportation was 642,5 thousand tons. In addition, 51,1 thousand tons of oil and 46,2 thousand tons of meal and other processing products were exported by rail transport in April. The volume of grain loading on May 22 amounted to 900 thousand tons (for April in general – 1 million 237 thousand tons). It is also worth noting that on May 6, an important event took place – the train that will carry the domestic corn crop to Austria became operational on a permanent basis.

The company “Agrosem” acted as a key partner between Ukrainian exporters and final buyers of corn. The German railway company Deutsche Bahn also joined the export of Ukrainian grain in May 2022 and began the creation of a “railway bridge”, which is expected to transport large volumes of agricultural products to the ports of the North and Adriatic seas. As the head of the Deutsche Bahn company Richard Lutz promises, fast transportation of grain is planned, as there will be 2-3 trains a day that will go through Poland to the terminals of Western Europe. In its desire to help Ukraine, the Czech Republic does not lag behind its European colleagues. In May, the Czech cargo railway operator CD Cargo started transporting grain from Ukraine to European ports, from where the consignments on ships go to buyers. CD Cargo has a license to operate in all neighboring countries. In addition, on May 26, during an online meeting, Ukrzaliznytsia and the largest Polish carrier PKP Cargo discussed the possibility of using non-standard options for transporting grain. The parties agreed on the possibility of using not only traditional grain wagons, but also semi-wagons for grain transportation (Mucha M., 2022).

This is what First Deputy Minister of Agricultural Policy and Food of Ukraine Taras Vysotskyi said regarding the future prospects of food exports through Ukrainian seaports: “Given this state of affairs, the world community should unite and act now.

Today, Ukraine needs the support of the world not only in stopping Russian aggression, but also in unblocking sea ports and “green corridors” for the export of agricultural products. I am sure that the international community perfectly understands the existing risks in the matter of food security. So Ukrainian seaports will be unblocked in any case” (Vysotsky T., 2022).

Thus, the global world processes currently taking place in the world food market are due, on the one hand, to insufficiently favorable climatic conditions in many wheat-exporting countries, and on the other hand, to the impossibility of unblocking Ukrainian ports in the Black Sea due to the military aggression of the Russian Federation. All this provokes the deepening of the global food crisis and negatively affects the international economy and trade. Ukrainian wheat and corn continue their way to the consumer despite all the obstacles and troubles. And the government of Ukraine in these processes is doing everything possible to resolve the problems that have arisen. Currently, an active search for ways to improve the situation in the export of Ukrainian grain is underway. The following proposals for solving problems with the export of grain products deserve attention:

- creation of non-temporary, but permanent alternative routes for the export of grain from the Ukrainian territory;
- construction of grain warehouses in Poland on the border with Ukraine to facilitate the export of Ukrainian grain to Europe by rail. It is advisable to attract European and American investors to such projects;
- diplomatic efforts to extend the “grain agreement”;
- development of projects and their gradual implementation on the transition of railway freight transportation to the EU gauge. This will make it possible to increase exports even in case of repeated blockade of sea routes;
- installation of temporary grain warehouses - collapsible modular structures and large polyethylene bags, which will allow to preserve the harvest and, in the future, to ensure the supply of grain to world markets.

The Ukrainian government is also trying to find ways to solve export problems. The Ministry of Infrastructure reported that next year they planned to create additional

railway terminals on the borders with Poland, Slovakia, Hungary and Romania. It is expected that in cooperation with European partners, the transportation of goods by rail will increase by at least 50% from the pre-war level.

Despite all the troubles in the fiscal and budgetary regulation and despite the active phase of hostilities, Ukraine was and remains a significant supplier of food in the world and actively influences the world's global processes. In such a difficult and unprecedented situation, we once again proved that our country is worthy of being a member of the European Union and has long held a prominent place among exporting countries. Domestic agricultural exports are successfully tested by war and guarantee both world food security and Ukraine's financial strength.

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