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ANALYSIS

Russia's Grain Exports and Supply Risks during Russia's War in Ukraine

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Abstract

Despite Russia's invasion of Ukraine, Russia's grain exports have increased. However, the risks determining Russia's actual wheat export supply in the short term have risen substantially. Thus, Russia's wheat exports might be lower than expected temporarily, driving up world market prices in that period and negatively affecting global food security. Political risks emanate from Russia's system of permanent wheat export restrictions, the country's unofficial minimum wheat export price, and increased governmental control of the grain export sector. Grain trade infrastructure in the Black Sea is exposed to military risks, which might lead to temporary disruptions of exports. Increased ruble exchange-rate volatility adds further risk to Russia's grain export supply. Countries that are heavily dependent on grain imports from Russia need to take measures to strengthen their grain-trade resilience in order to increase their food security.

Before Russia's invasion of Ukraine, grain exports by Kazakhstan, Russia, and Ukraine were growing quickly. It was not until 2000 that these three countries became net exporters of grain. Over the ensuing two decades, however, Russia rose to become the world's largest wheat exporter, while Ukraine became one of the largest corn exporters. Although Kazakhstan exports significantly less wheat, it is one of the world's leading exporters of wheat flour.

In recent years, total grain exports by Kazakhstan, Russia, and Ukraine have exceeded 100 million tons annually. Roughly speaking, this corresponds to over a quarter of world exports of wheat, corn, and barley (see Figure 1 overleaf and Table 1 on p. 17).

Russian wheat has mainly been imported by countries in the Middle East and North Africa (MENA), with Egypt and Turkey the main target markets. In recent years, Russia's exports to low-income countries that are net wheat importers and heavily dependent on food imports (eg., those of sub-Saharan Africa) have increased (Heigermoser et al. 2022). Russia is now the main supplier of wheat to African countries, accounting for 26% of total wheat imports by African countries in 2021 (Götz and Svanidze 2023). As such, the destinations of Russia's and Ukraine's wheat exports largely overlap. Kazakhstan, by contrast, exports wheat primarily to its neighbors in the region, including Uzbekistan, Tajikistan, and Afghanistan.

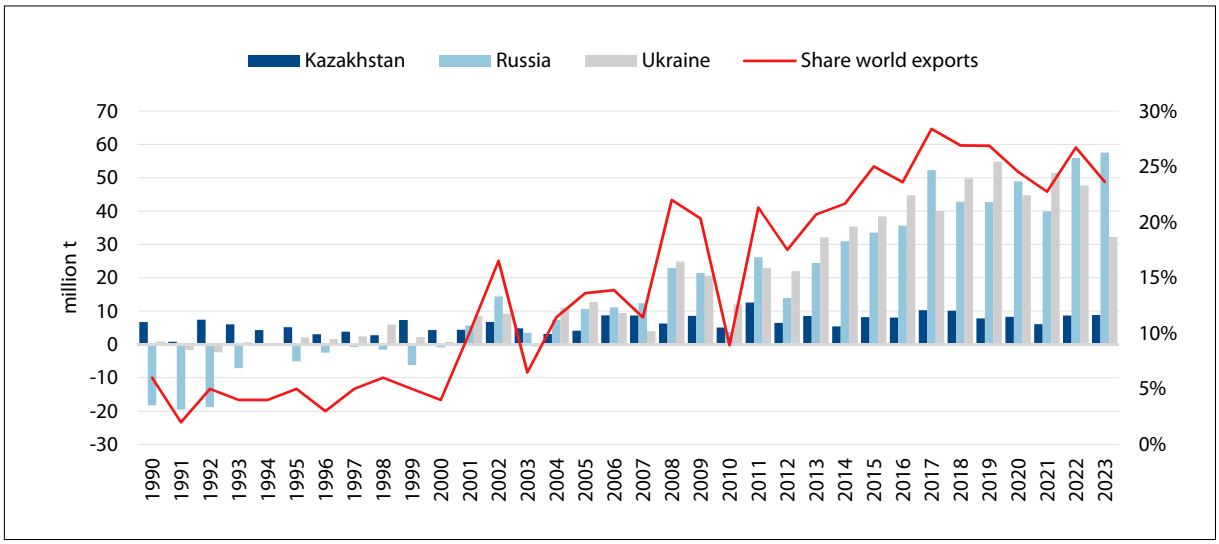
Since Russia's invasion of Ukraine, the volume of Russia's grain exports has only increased. Forecasts suggest that Russia will remain a dominant supplier of wheat to the world market. In the current marketing year (2023/24), the U.S. Department of Agriculture (USDA) predicts that Russia's wheat exports will increase from 47.5 (2022/23) to 50 million tons, even as Russia's wheat production declines from 92 to 85 million tons. This increase will be due to Russia selling more ending stocks from the previous marketing season, among other things. Russia's exports of corn and barley, meanwhile, will remain constant.

USDA forecasts that Ukrainian production of wheat and corn will increase slightly compared to 2022/23 even if the war drags on. Grain exports, however, may decline. While Ukraine's importance to the global grain supply will likely rise again once the war is over, grain exports might decline in importance while exports of oilseeds and oilseed products might become more prominent, depending on future export logistics.

Russia's wheat trade pattern will likely become more influenced by geopolitics. In recent years, Iran has become one of the primary destinations for Russian wheat exports. Grain exports to China might also increase, thanks to the New Land Grain Corridor that runs from the Urals through Siberia and the Russian Far East to China. Once the North–South transport corridor, a planned railway route connecting Russia to the Indian Ocean, is completed, grain export to countries in the Middle East and South Asia (including Iran, India, and Pakistan) might likewise rise.

Despite the continued growth in Russia's importance to the global wheat supply, risks to Russia's wheat export supply have increased since the start of Russia's full-scale war against Ukraine. Russia's previous temporary export restrictions have hardened into a permanent system and Moscow has reportedly made efforts to establish a minimum wheat export price. In addition, Russia's grain export sector has been subject to restructuring and macroeconomic

Figure 1: Net Grain Exports (in Million t) by Kazakhstan, Russia, and Ukraine (Left Axis), and Their Share of World Grain Exports (in %, Right Axis)



Note: The red line depicts the sum of the shares of Kazakhstan, Russia, and Ukraine as a percentage of world grain exports.

Source: Compiled by the authors using data from USDA Production, Supply and Distribution (PSD) online; 2023/24 values drawn from an August 2023 World Agricultural Supply and Demand Estimates (WASDE) forecast (see also Table 1 on p. 17).

instability has increased. This adds to the increased risk of export supply disruptions as grain transport by ship in the Black Sea is exposed to military risks in general.

The remainder of this article provides an overview of major risks that have increased with Russia's war in Ukraine. We conclude with recommendations for grain import-dependent countries to counter those risks.

Russia's Current Policies Restricting Wheat Exports

Russia has repeatedly restricted its wheat exports to insulate domestic markets from rising world market prices. During the 2007/08 food crisis, this took the form of an export tax (Götz et al., 2013); Russia subsequently banned wheat exports in 2010/11 (Svanidze et al., 2022) and limited them with an export tax in 2015. An export quota implemented in March 2020 was extended for the third time in 2023. In February 2021, the Russian government imposed a flat export tax; in June of that year, it was transformed into a rather complex floating export tax system that remains in force (Svanidze et al., 2023).

The export tax formula has been adjusted six times since its imposition in response to rapidly changing market conditions. The export duty reached its highest value of $146 per ton in early July 2022, amounting to nearly half of the Russian wheat producers' price. In view of high world wheat prices, a bumper harvest, and a strong ruble at the beginning of the new harvesting season, the tax rate was lowered twice (in July 2022 and June 2023) by changing the calculation rule to improve the competitiveness of Russian wheat exports on international markets. As a result, the wheat export tax became more strongly linked to changes in the wheat export price and the ruble exchange rate. This raises the question of to what extent the generation of tax revenue is decisive for the setup of the wheat export tax.

Experts also report attempts by the government to unofficially enforce a minimum export price. To date, however, such limitations on the export price have not been successful, given Russia's good harvest and large carryover stocks, as well as sufficient world wheat supply. In the event of adverse market conditions, however, a minimum Russian export price might influence the price level on the world wheat market.

In contrast to previous export restrictions, Russia's current flexible wheat-export controls seem to have remained in effect for quite an extended period. The current wheat export tax, embedded in the Russian wheat trade system, decouples domestic producer prices from the world market price by increasing domestic supply, which lowers producer prices. In the short run, Russia's wheat export supply may be limited by the government increasing the export tax, which may raise world market prices, with knock-on effects for global food security, particularly in low-income countries dependent on wheat imports. In the medium and long term, a large export tax would also negatively impact production in the Russian grain sector, as it would reduce the revenues and profits of producers and export companies.

Restructuring of Russia's Grain Export Business

Russia's wheat export business has grown over the past decade, with Russian companies trading an increasing share of wheat compared to their international counterparts. The state-controlled Russian bank VTB has also been consolidating its role in local grain markets by acquiring trading companies, railway and port infrastructure since 2019 (Logistics OS, 2020).

Following Russia's full-scale invasion of Ukraine in 2022, large multinational agricultural export companies such as Viterra (US), Cargill (US), and Louis Dreyfus (France) first limited their operations in Russia and then exited the Russian market at the end of the 2022/23 marketing year, induced—according to experts—by pressure from the Russian government (Almeida et al.,2023). As of the 2023/24 marketing year, Aston (US, Switzerland) is the only international company conducting grain-trading operations in Russia. The company is one of the top three exporters of wheat from Russia and has nearly doubled its wheat exports in 2022/23 compared to the previous marketing year.

This shift has given local Russian firms more control over grain shipments. In particular, the two largest Russian privately owned companies, "Rif" and "Grain Gates," noticeably increased their wheat shipments in 2022/23 compared to 2021/22. The former, which increased its wheat exports from 6.1 million tons in 2021/22 to 8.2 million tons in 2022/23, has been the largest exporter of wheat from Russia for the last seven years. The latter, a private company registered only in 2022, exported nearly the same quantity of wheat (7.7 million tons) in 2022/23. Those changes have led to increasing concentration in Russia's grain export business, in contrast to the decline in the export shares of the leading companies over the past decade. In 2022/23, the top three export companies ("Rif", "Grain Gates" and "Aston") account for 44% of Russian wheat exports .

Disintegration from global value chains, increased market concentration, and the presence of state-owned enterprises in grain trade and port infrastructure all facilitate Russian state control and increase the opportunities for politicization of the grain trade. This may raise concerns about the market efficiency of the grain sector, which is increasingly directed toward geopolitical aims.

Grain Prices React to the Military Risks in the Black Sea Region

Russia's invasion of Ukraine and its military blockade of Ukrainian ports heavily disrupted Ukraine's global supply chains for agricultural goods and foodstuffs via its Black Sea ports. Following the blockade, Ukraine's agricultural exports collapsed, with only a limited volume of grain exported via the newly established EU-Ukraine Solidarity Lanes, which opened up logistics routes by truck, train, and ship via the Danube River (Götz and Svanidze, 2023). In August 2022, the Black Sea Grain Corridor opened within the framework of Black Sea Grain Initiative, allowing Ukrainian grain exports via Black Sea ports to resume. Since the opening of the Black Sea Grain Corridor aided significantly in bringing down grain prices, grain prices were expected to increase substantially when Russia left the Black Sea Grain Initiative and the corridor was closed. However, only relatively modest price increases were observed. Following the closure of the Black Sea Grain Corridor on July 17, 2023; the concurrent closure of the Kerch Strait on July 17–20; and the damaging of the Crimean Bridge in a military attack, wheat futures prices at the Euronext in Paris increased a rather modest 14% (see Figure 2). Significant price increases were observed when a tanker near the Crimean Bridge was hit (August 5) and a warship was attacked near Novorossiysk (August 4).

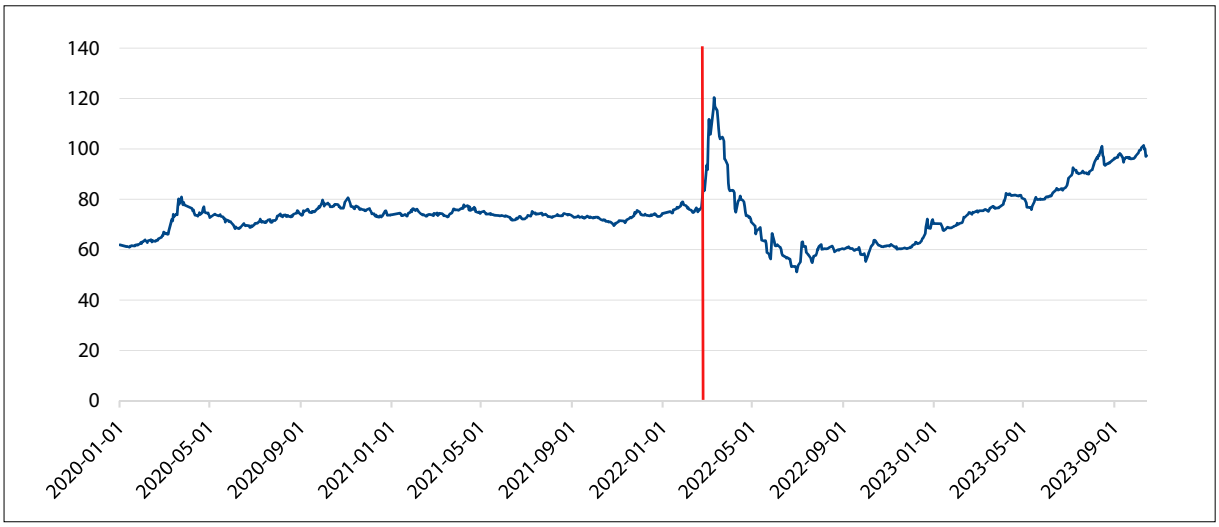
The fact that the termination of the Black Sea Grain Initiative caused wheat prices to increase only modestly can be explained by Ukraine's comparatively low monthly grain exports. These amount to 2.65 million tons per month, compared to the 4.7 million tons forecasted for Russia by USDA in the 2023/24 season. The closure of the Kerch Strait mattered, since a significant share of Russia's Black Sea grain exports transit the Azov Sea and ships pass through the Kerch Strait to enter the Black Sea. However, the majority of grain ships leave from the Port of Novorossiysk. Thus, any export supply chain disruptions related to the latter port may induce stronger price effects. In general, attacks on port export infrastructure increase ship insurance costs and thus transport costs. That being said, the attacks on Danube River port infrastructure that took place on August 16 and 23 only produced moderate price effects. Ukrainian grain is transported via the Danube River mainly from the Port of Constanța in Romania, where it is reloaded onto larger ships. The small price effects might be explained in part by the existence of alternative logistics routes among the EU-Ukraine Solidarity Lanes.

These war-related incidents and their price effects have increased price volatility since the Black Sea Grain Initiative was halted. It is highly likely that military activities on the Black Sea will resume, increasing the risk of export supply disruptions.

Macroeconomic Instability Influences Grain Export Business in Russia

Following Russia's invasion of Ukraine, the Russian ruble fell sharply, increasing the ruble-U.S. dollar exchange rate from less than 80 to over 110 within two weeks, with a peak of 132 in March 2022 (see Figure 2). As a result, the competitiveness of Russia's wheat exports increased dramatically, inducing an increase in wheat exports compared to the same period of the previous year.

Figure 2: Russian Ruble/U.S. Dollar Exchange Rate



Note: The vertical line corresponds to the Russian invasion of Ukraine (February 24, 2022).

Source: Compiled by the authors on the basis of Bank of Russia data.

Due to the capital controls imposed by the Russian Central Bank on the exchange rate market and Western sanctions limiting Russian imports, even as exports of oil and gas were maintained, the ruble appreciated. The strong ruble-U.S. dollar exchange rate decreased the international competitiveness of Russian wheat on world markets (Yugay et al., 2020). Thus, wheat exports in June 2022 fell strongly, and despite a record wheat harvest, Russia's wheat exports were considerably lower in July–September 2022 than in the same period of 2021. However, wheat exports resumed in October 2022, when the ruble weakened, exceeding exports in the previous year. The ruble's weakening continues, increasing Russian exports' competitiveness and fueling wheat exports.

Thus, Russia's export supply is substantially determined by the evolution of the ruble exchange rate. Due to the war in Ukraine and the concomitant imposition of Western sanctions on Russia, ruble exchange-rate volatility can be expected to remain high, adding further risk to Russia's grain export supply. In the medium term, high exchange-rate volatility, together with the wheat export tax, will drive the disintegration of Russia's domestic wheat markets from the world market, which may reduce domestic grain production in Russia in the longer term.

Conclusions

Following the dissolution of the Soviet Union, Kazakhstan, Russia, and Ukraine became net exporters of grains in 2000 and now rank among the world's leading grain exporters. Russia is the world's largest exporter of wheat. By diversifying and widening export supply, Kazakhstan, Russia, and Ukraine have strengthened global food security.

Despite Russia's invasion of Ukraine, Russia's grain exports increased. It is expected that Russia will remain a dominant global wheat supplier going forward. However, risks associated with Russia's wheat export supply have risen substantially in various respects. Thus, Russia's wheat export supply might be lower than expected temporarily, driving up world market prices and negatively impacting global food security.

First, now that Russia's wheat export tax has hardened into a permanent system, the risk of politically driven short-run export reductions inducing upward pressure on world market prices has increased, negatively impacting Russia's domestic production in the long term. Also, the potential for an informal minimum export price that exceeds the actual world market price opens up the prospect that the world wheat market price may be increased and stabilize at a higher level temporarily, especially in the event of adverse market conditions. Second, the disintegration of the Russian grain export business from global value chains has led to increased market concentration and a more dominant presence for state-owned enterprises in the grain export sector. This may expand opportunities for governmental con-

trol and politicization of the grain trade; geopolitical aims may be pursued at the cost of decreased market efficiency, driving up grain prices worldwide. Third, military activities in the Black Sea have increased the risk of export supply-chain disruptions for Russia (and Ukraine), which may decrease export supply in the short term and induce additional shocks on the world market price temporarily. Fourth, Russia's macroeconomic instability has increased substantially due to rising ruble-U.S. dollar exchange rate volatility, adding further risk to Russia's wheat export supply.

Due to Russia's dominant position in the global wheat market, which is expected to continue, this increased export supply risk has implications for grain supply chains globally. Countries with high dependency on wheat imports from Russia should reduce their risk by diversifying grain imports and expanding their grain storage facilities in order to buffer short-term price increases, as well as by enhancing local production of grains or substitute products where possible. Additional steps to protect global supply chains include diversifying transit routes (e.g., using the Trans-Caspian International Transport Route as an alternative to the Black Sea for Kazakh grain exports).

Measures to increase supply-chain resilience are not free of costs, however. Import diversification and import substitution in general, as well as the expansion of local food production, may involve raising domestic food prices, thereby limiting access to food (especially for low-income urban consumers) and negatively affecting food security. In response, governments that currently employ price controls and subsidize consumption of grains and cereal products might consider alternative, better-targeted policy instruments. Redirecting financial support to target food-insecure consumers should help to limit governments' financial burden in times of higher food prices and help domestic producers to benefit from production stimuli. Political costs, i.e., the potential loss of support by middle-income urban consumers, could be addressed by strong communication regarding policy reform and the gradual implementation of said reform. Expanding domestic food production may also require land to be converted to cropland, potentially inducing carbon emissions and contributing to climate change. These interactions, feedback loops, and conflicting goals need to be carefully balanced.

About the Authors

Linde Götz is Deputy Head of the Department of Agricultural Markets at IAMO and Associate Professor at Martin Luther University Halle-Wittenberg, Germany. She obtained her PhD in Agricultural Economics from the University of Göttingen. She researches agri-food value chains, international trade, and sustainable food systems, with a focus on the Black Sea grain exporters Russia, Ukraine, and Kazakhstan in the context of global food security.

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Table 1: Net Grain Exports by Kazakhstan, Russia, and Ukraine, and Their Share of World Grain Exports (mill. t)

Year	Kazakh-stan	Russia	Ukraine	Share of world exports
1990	7	–18	1	6%
1991	1	–20	-2	2%
1992	7	–19	-2	5%
1993	6	–7	1	4%
1994	4	0	0	4%
1995	5	–5	2	5%
1996	3	–2	2	3%
1997	4	–1	2	5%
1998	3	–2	6	6%
1999	7	–6	2	5%
2000	4	–1	1	4%
2001	4	6	8	10%
2002	7	14	9	17%
2003	5	3	–1	6%
2004	3	7	11	11%
2005	4	11	13	14%
2006	9	11	9	14%
2007	9	12	4	11%
2008	6	23	25	22%
2009	9	21	21	20%
2010	5	4	12	9%
2011	13	26	23	21%
2012	6	14	22	18%
2013	8	24	32	21%
2014	5	31	35	22%
2015	8	34	38	25%
2016	8	36	45	24%
2017	10	52	40	28%
2018	10	43	50	27%
2019	8	43	55	27%
2020	8	49	45	25%
2021	6	40	51	23%
2022	9	56	48	27%
2023	9	58	32	24%

Source: Compiled by the authors using data from USDA Production, Supply and Distribution (PSD) online; 2023/24 values drawn from an August 2023 World Agricultural Supply and Demand Estimates (WASDE) forecast.