

The War in Ukraine Disrupts Agricultural Value Chains, but Trade Policy Measures Can Mitigate the Impacts

Topic: Input-Output Modelling: Trade and Global Value Chains Policies - II

Author: Maksym G. Chepeliev

Co-Authors: Maryla Maliszewska, Maria Filipa Seara e Pereira

On 24 February 2022, Russia launched an unprovoked attack on Ukraine, invading its territory on multiple fronts, including from neighboring Belarus. The ongoing war has disrupted global supplies of many essential commodities, with agricultural products, food, fertilizers, and energy at the top of the list. As Ukraine and Russia are major exporters of these essential goods, supply disruptions and associated price spikes are being severely felt across the globe.

Earlier studies have provided valuable contributions toward better understanding the implications of the war for agricultural commodity markets and food security while proposing specific measures to ease the adverse impacts. However, several important points have not been properly addressed in the literature. First, while rich in qualitative discussions, the existing literature lacks a detailed quantification of the potential implications of the war on the agricultural trade and value chains for the countries/regions around the globe. Second, most of the earlier studies that focused on the topic of agricultural/food-related implications of the war in Ukraine have not explicitly considered a broader context of sanctions, climate impacts, and trade restrictions that shapes the impacts of the war on the agricultural sector. Finally, the discussion of the potential policy responses to the food crises caused by the war has been primarily of a qualitative nature.

To explore the impacts of the Russian invasion of Ukraine on the global agricultural trade and value chains, we link a Global Trade Analysis Project (GTAP) global multi-region input-output (MRIO) database with the ENVISAGE computable general equilibrium (CGE) model, which distinguishes agent-based demand for imports by region of origin. We also incorporate a recently developed GTAP nutritional module into the assessment framework. The model represents the global economy with 23 aggregate regions/countries and 25 sectors. To capture the impacts of the war and implications of other ongoing market disruptions, a number of commodity- and country-specific shocks are considered: (a) agricultural supply shocks in Ukraine, Russia, and Belarus due to direct impacts of the war, with the implementation of a 35 percent supply shock for crops in Ukraine, and in line with the USDA forecast; (b) Change in crop yields due to weather conditions in 2022 following a comparison of the USDA yield forecasts between the spring and winter; (c) observed restrictions (bans or export taxes) implemented by countries around the world during 2022; (d) disruptions to fertilizer commodity markets, such as an increase in the price of imported fertilizer; (e) restrictions on fossil fuel imports from Russia by EU and other countries, and a downward shift in the global fossil fuel supply by the OPEC; (f) other trade-related sanctions imposed on Russia.

In addition to the shocks listed above, which are expected to have negative implications for agricultural value chains and food supply, we are exploring a set of policy responses that countries could implement to alleviate the adverse impacts of the ongoing disruptions. These include the following: (a) trade liberalization measures, which assume an elimination of import tariffs on agricultural primary and processed commodities, and (b) implementation of the trade facilitation measures (TFMs).

Our analysis provides several crucial policy insights. First, when analyzing the impacts of agricultural market disruptions, such as from the war in Ukraine, it is important to consider a broad context of the ongoing policies, climate impacts, and market disruptions. As we show, in many cases, the latter substantially exacerbates the direct impacts of the war. Second, with rapidly increasing food prices, some countries have started imposing agricultural trade restrictions to protect domestic consumers.

Our results suggest that such actions should be avoided, as they only further jeopardize global food security. Third, the consequences of the war in Ukraine have already put disproportionate pressure on lower-income households in developing countries, who spend a large share of their budget on food and energy. Buffering the impacts on poor households via targeted support measures, such as direct lump-sum payments, is a crucial step to ease the burden on the most vulnerable. Finally, the analysis shows that the implementation of trade facilitation measures and the reduction of import tariffs on agricultural and food commodities could mitigate the impacts of the war by boosting agricultural trade and increasing overall food availability.