

Agriculture Insight

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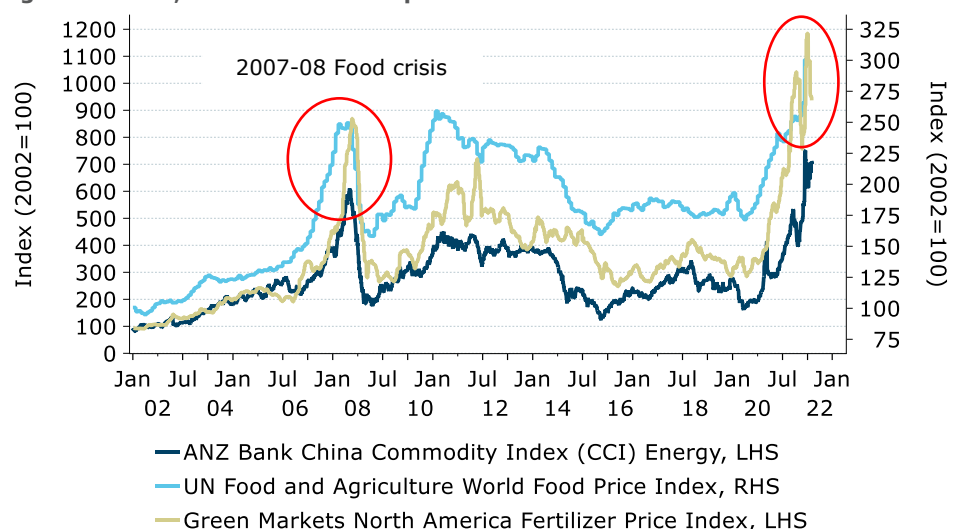
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Global food crisis to worsen

- The Russia-Ukraine war is triggering a prolonged global food crisis. Lost exports from these two key exporting countries, inclement weather, higher input prices and food protectionism are major headwinds for global food supplies.
- Higher dependence on imported food makes African countries vulnerable to a severe food crisis. Other developing countries are facing higher food inflation as well. Deteriorating food insecurity will make it difficult to achieve the United Nation's sustainability goal of 'zero hunger' by 2030.
- Global grain stocks are being depleted rapidly amid a series of poor harvests, impacted by La Niña weather patterns. The level of global inventories looks precarious, with the exception of China, as it currently holds much of the world's grain reserves. China has been stockpiling soft commodities for the past few years. But even their leaders are urging local authorities to focus on maximising harvests to normalise prices.
- Food crisis is triggering food protectionism, which is worsening supply disruptions and pushing soft commodity prices higher. Trade restrictions have also been imposed on fertilisers by Russia and China. Higher energy and other input prices are further adding to producers' woes.
- The FAO Food Price Index has surged to a record level, well above its previous peak in 2011. Ongoing food inflation will challenge central banks' ability to rein in overall inflation.
- In the short term, increased planting is key to alleviate the food crisis, as well as getting grain out of Black Sea region. In the long-term, the world needs to produce more food with limited inputs. Innovation and more digitisation will be critical to avoid increased levels of hunger.

Figure 1. Food, fuel and fertilizer prices



Source: Bloomberg, Macrobond, ANZ Research

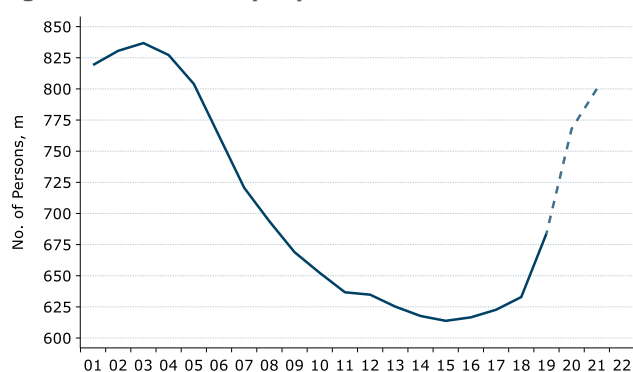
UN food security goal looks distant

Food insecurity is worsening after the Russian invasion of Ukraine. Available energy and food supplies are diminishing, as Russia is one of the leading energy and grain producers. Ukraine is another major grain exporter, and holds key transit infrastructure through which Russian supplies flow. As the ongoing war impacts energy and fertiliser availability, we see crop production being challenged next season as well. Infrastructure damage, higher input prices and export uncertainty will not only weigh on Ukrainian crop production, but also leave their marks on the Russian harvest. These factors are converging at a time when the world is still recovering from the devastating pandemic.

Emerging and less-developed countries are at risk of acute hunger. The World Food Programme estimates up to 20 million people in eastern Africa are facing severe hunger. Due to infrastructure damage in Ukraine, the UN reports nearly 25 million tonnes (mt) of grains are stuck in that country. Disruptions across a range of food items have seen the FAO food index hitting a record high, which could potentially trigger a severe food crisis.

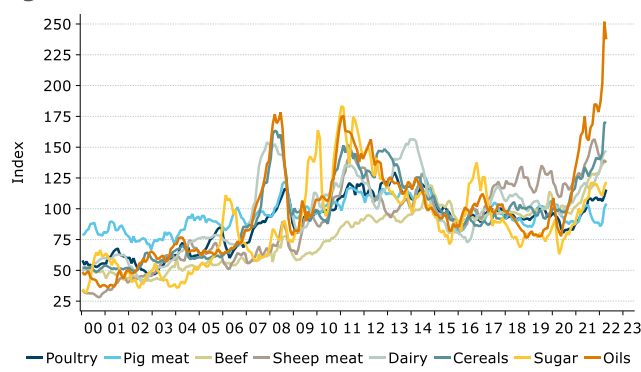
Deteriorating agriculture production threatens the UN's Sustainable Development Goal of 'zero hunger' by 2030. Undernourishment declined over 2002-14 before stabilising from 2014-2019. However, years of progress are now being undone. The number of undernourished people rose from 683m in 2019 to 768m people in 2020 (figure 2) due to the pandemic and extreme weather. This cumulated into acute food insecurity and an increase in the number of undernourished people to 800m last year. This year, the Russian invasion of Ukraine is the key trigger for deepening the food crisis further. The number of undernourished people is now heading towards the levels recorded in 2002, when there was widespread famine in Africa. **According to UN estimates, 660 million people in the world will still face hunger in 2030 due to the lasting impact of the COVID-19 pandemic.** This number could be still higher if we account for the ongoing conflict in Ukraine.

Figure 2. Number of people undernourished



Source: FAO, World Bank, Bloomberg, Macrobond, ANZ Research

Figure 3. FAO Food Price Index



Source: FAO, Bloomberg, Macrobond, ANZ Research

Global grain stocks are being depleted

Global grain inventories have been shrinking since 2017. The US Department of Agriculture (USDA) estimates global grain stockpiles will fall a further 21m tonnes to 784mt in the 2022-23 marketing year. The number looks more precarious if we exclude China's inventories, which are in practice not available for the rest of the world. China imports have risen sharply since 2010 in an effort to ensure food security and contain food inflation. The country holds nearly 58% of global grain stocks, exacerbating the grain supply shortage in the rest of the world. Global stocks excluding China stocks are estimated to fall this year to 328mt, the lowest since 2016.

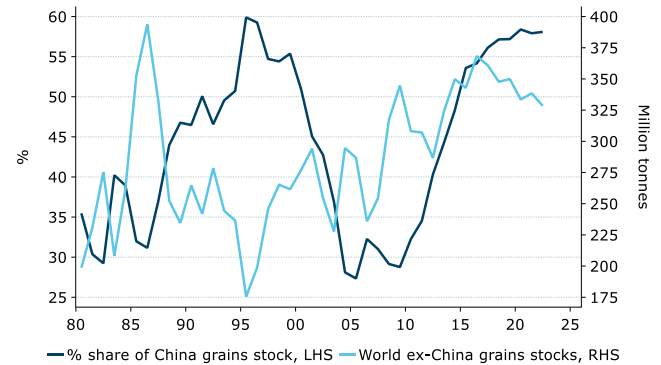
That means the stock-to-use ratio will fall to a multi-year low of 15% in 2022-23. Inventories in the Black Sea region will be unavailable too, due to the ongoing conflict between Russia and Ukraine.

Figure 4. World ex-China grains stock-to-use ratio



Source: USDA, Macrobond, ANZ Research

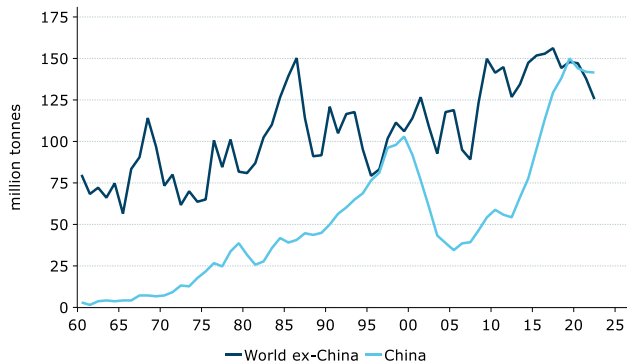
Figure 5. % share of China total grain inventories vs world ex-China inventories



Source: USDA, Macrobond, ANZ Research

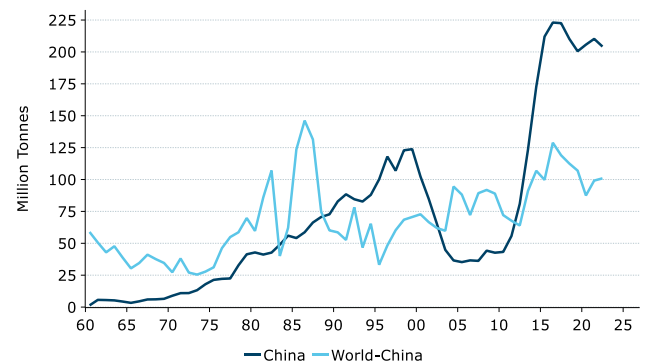
Stocks of various types of grains are facing similar trends, with China holding 141mt of wheat inventories against rest-of-world inventories of 126mt. Global wheat inventories are estimated to hit a six-year low of 267mt in 2022-23. The ratio of annual ending stocks against consumption for the world ex-China are expected to decline to 15% in 2022 from 16.4% this year. This is only marginally higher than the record low stock-to-use ratio of 14.3% in 2007/08. In the case of corn, China holds nearly 67% (204mt) of global inventories. Global inventories ex-China cover only one month of consumption.

Figure 6. China and world ex-China wheat stocks



Source: USDA, Bloomberg, Macrobond, ANZ Research

Figure 7. China and world ex-China corn stocks



Source: USDA, Bloomberg, Macrobond, ANZ Research

Russia-Ukraine conflict to exacerbate the crisis

Russia and Ukraine have in recent years contributed 30%, 17% and 76% respectively of global wheat, corn and sunflower oil exports. These two countries are major producers for sunflower seeds, and together account for 56% of global production, while their sunflower oil makes up 10% of global vegetable oil production. As such, a large share of grain and oil production and exports are at risk, which could severely tighten the market.

Export losses remain a short-term risk, as Ukraine's ports are closed and infrastructure has been damaged. However, exports of wheat from Ukraine were strong until February, clearing nearly 18mt, out of total export estimates of 19mt. This suggests nearly 90% of exports have already been shipped this year compared to 85% in the 2020-21 marketing year. So, near-term losses may not be as great as they at first seem.

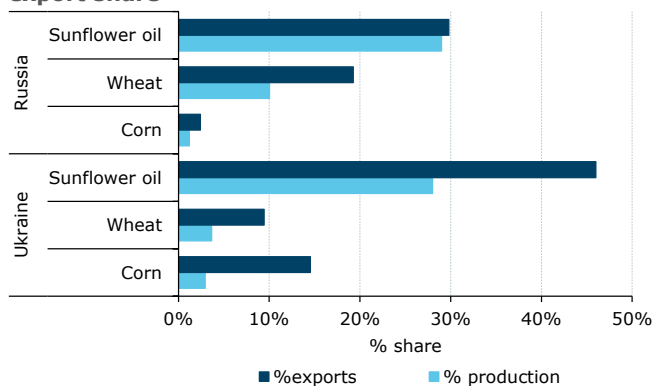
The USDA recently lowered its estimates of Ukrainian wheat exports by 1mt to 19mt. Russia exported 24mt of wheat before April, against estimates of 33mt for this marketing season (July 2021 to June 2022). We doubt that the shortfall of 9mt will be recovered in the remaining two months of the season. Conservatively, we see 7-8mt of wheat exports at risk for this marketing season, which equals 4% of global exports.

Ukrainian corn export estimates have been revised down by 4.5mt to 23mt for the October 2021 to September 2022 marketing year. Nearly 17mt of corn has been exported, out of revised export estimates of 23mt. Of that, Russia exported nearly 1.8mt of corn out of total 4.5mt for this year. Therefore, nearly 8mt of corn exports are at risk, which is 4% of global corn exports of 197mt.

With the war dragging into the spring planting season, Ukraine's next-season crops will be impacted. Ukraine produces nearly 35mt of corn, 28mt of wheat and 14.9mt of sunflower seeds. Ukraine's Agriculture Ministry said areas of intense conflict could see a drop of 70% of the sowing area, and northern areas could see decline of 30-40%. Overall, planting would drop by 20-30%y/y, but losses could be even greater. Grain yields could fall by more than 30% next season due to disrupted farm management alone. High fertiliser prices will further inhibit productivity.

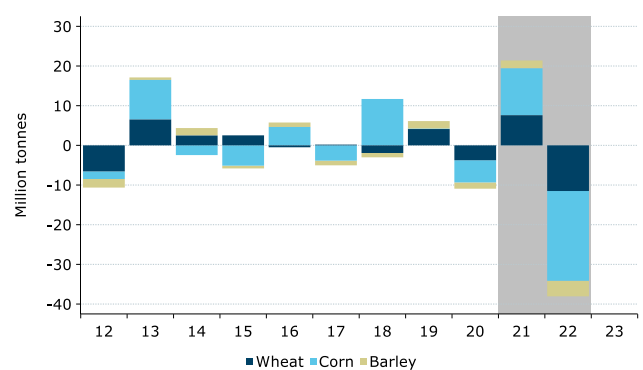
The first USDA estimates for the next marketing season suggest nearly a 50% y/y decline in Ukrainian corn, wheat and barley production for 2022-23.

Figure 8. Russia's and Ukraine's production and export share



Source: USDA, ANZ Research

Figure 9. Ukraine's grains production growth



Source: USDA, Bloomberg, Macrobond, ANZ Research

Russia's production and exports will also suffer amid sanction-related uncertainty. Russia produces an average of 80mt of wheat and 13mt of corn each year. Global wheat exports could suffer, though the USDA estimate suggests an increase for 2022-23. Global grains production is estimated to drop in 2022-23, which indicates the food crisis could last even longer.

Poor harvests not helping

Weather shocks in the form of drought, rainfall deficits, flooding and cyclones have impacted global crop production in recent years. La Niña-induced dry weather has been a key threat to the production outlook for the Americas. South America's soybean yields fell for the current year and risks are rising around the upcoming US planting season. The National Oceanic and Atmospheric Administration is projecting a sustained La Niña impact, which could impact yields in South America and the US for a second year.

Drought in the US plains has already diminished winter wheat yields, with the proportion of crops in 'good-to-excellent condition' at its lowest since 1996. Rainfall during winter was low, affecting wheat emerging from winter dormancy. Dry weather is likely in the southern states, which will affect

spring wheat and corn too. This could be negative for wheat yields but this may be partially offset by an increase in the area planted. Corn and soybean planting in the US is underway, but cool and wet conditions is causing delays. This may weigh on final acreage and corn yields, as the planting window normally closes in mid-May. Extended dry weather during summer could reduce US soybean and corn yields, at a time when global inventories are already tight.

Prolonged labour shortages have limited Malaysia's palm oil production prospects (9% of global edible oil production).

Most recently, the Russia-Ukraine conflict has threatened 58% of global sunflower oil supply, worsening the already-constricted edible oil stockpile.

Figure 10. Wheat production growth and global stock-to-use ratio

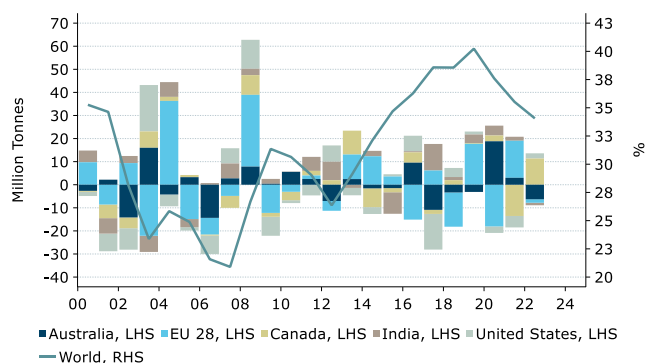
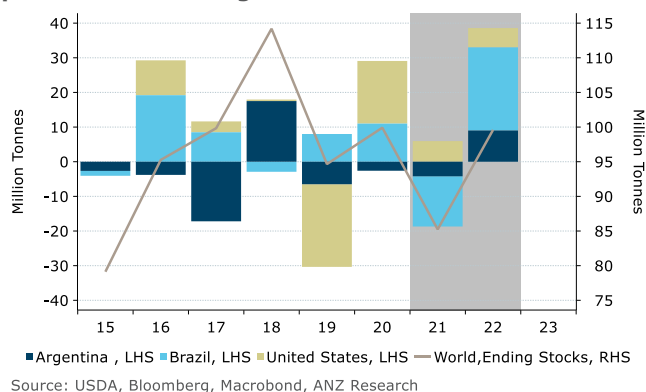


Figure 11. Soybean production growth in major producers vs. ending stocks



Fertiliser shortages are adding to woes

Fertiliser prices have rallied sharply in the past year, driven up initially by the energy crisis (as gas is the feedstock for nitrogen fertiliser), freight disruptions associated with the pandemic, and more recently, the Ukraine situation.

Russia and Belarus are major exporters of both potash and nitrogen. Russia exports nearly 7mt annually, or 30% of global NPK fertiliser exports. It accounts for 80% of EU nitrogen fertiliser imports, due largely to cheap natural gas supplies. Sanctions and energy shortages have made fertilisers, particularly synthetic fertilisers, much costlier to produce.

China is the world's largest producer of nitrogen fertiliser. Fertiliser prices in China have skyrocketed during the pandemic as the cost of natural gas has risen. Last year, China limited the amount of phosphate available for export, to ensure it has enough stockpiled to meet domestic demand. Excessively high fertiliser prices mean farmers are limiting their use, reducing yields. This is particularly the case in developing nations, where farmers simply don't have the cash to buy fertiliser. This means crop production will be hit particularly hard in Africa, South America and parts of Asia.

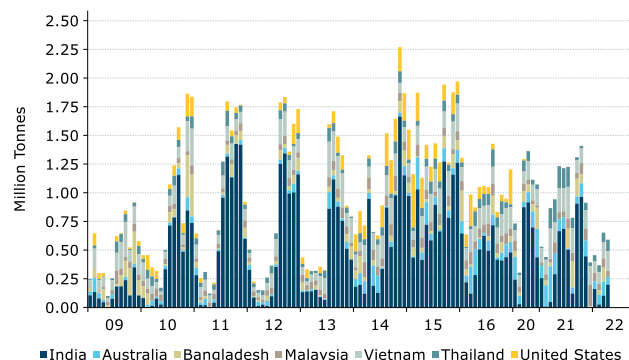
Meanwhile, demand for fertilisers from key agriculture markets remains strong amid rising grains prices. Higher crop prices are incentivising these farmers to use more fertiliser to increase productivity. The combination of tight supplies and strong demand should keep prices elevated, though we have to be mindful of the recent price rally.

Figure 12. China urea wholesale price



Source: Eurostat, ZCE, Bloomberg, Macrobond, ANZ Research

Figure 13. China total fertiliser exports



Source: Bloomberg, Macrobond, ANZ Research

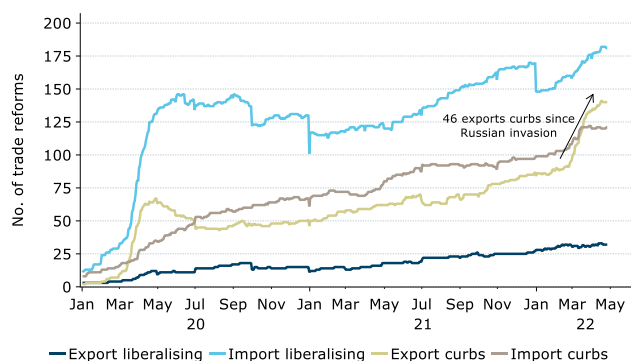
Growing food protectionism

Supplies of many food commodities are being restricted as countries focus on feeding their own population. Food inflation has been a major issue in many countries since Russia invaded Ukraine.

This has triggered multiple trade restrictions in various countries in the form of outright export bans, taxes or quotas. According to the Food Policy Research Institute, as many as 46 policies that restrict exports have been instated to tame domestic food inflation. [This makes food import-dependent countries more vulnerable to a severe food crisis.](#) Import dependency amongst African countries is high, ranging from 16% for Eastern Africa to 52% for Northern Africa.

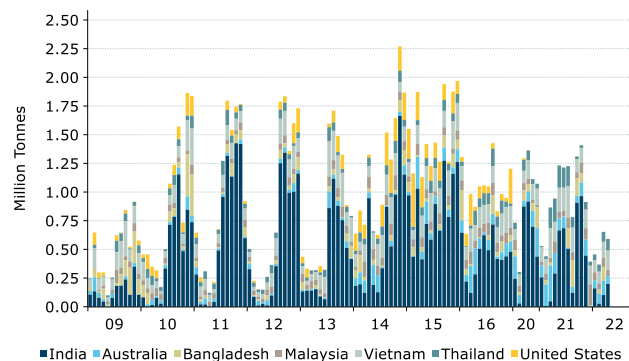
According to the report, the share of restricted exports has increased to 17%, nearly the same as during the 2007-08 food crisis.

Figure 14. Number of trade reforms



Source: IFPRI, Macrobond, ANZ Research

Figure 15. China total fertiliser exports



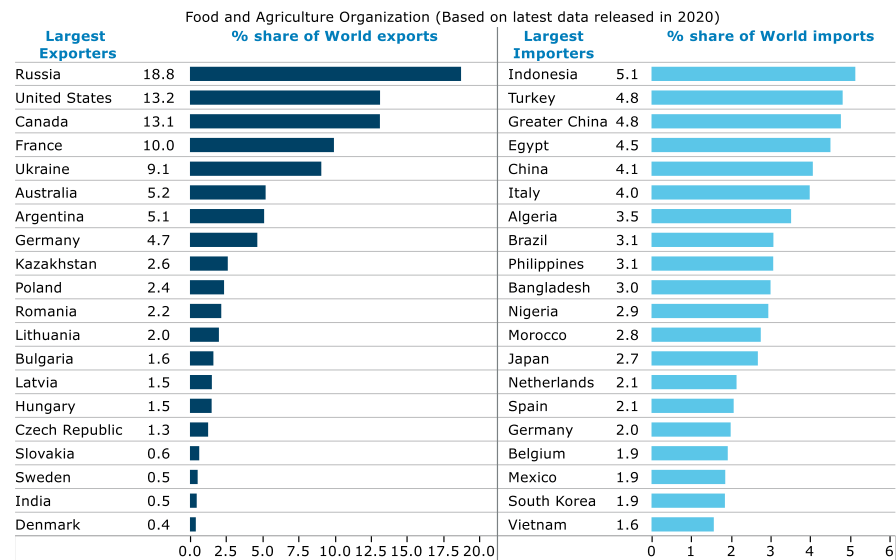
Source: Bloomberg, Macrobond, ANZ Research

Indonesia imposed a ban on palm oil exports in April to contain skyrocketing domestic vegetable oil prices. Although the ban has now ended, it has been replaced by a quota, and there continues to be significant disruptions to supply. The USDA has now revised down Indonesia's palm oil exports expectations by 3mt to 25mt, which is a 12 year low. The reduced supply of palm oil has occurred when the market was already experiencing reduced supply of sunflower oil. Vegetable oil inventories are now at multi-year lows and the supply outlook looks downbeat.

India's wheat export ban is another addition to trade protectionism, with the wheat harvest for next year at risk due to a heatwave in the country. India's exports have increased to 8.5mt in recent years. Such restrictions when the world is already facing export losses from Ukraine and Russia could worsen the supply situation. Another commodity India has restricted recently is sugar, for which exports have been restricted from 1 June to 10mt for the

year to Sep 2022. India is the second-largest producer and exporter of sugar after Brazil. Rice is likely to be the next target for export restrictions by the Indian government. India is the world's largest rice exporter, accounting for 40% of global rice exports. Any additional trade restrictions are likely to worsen the food crisis.

Figure 16. World's wheat largest exporters and importers



Source: FAO, Bloomberg, Macrobond, ANZ Research

Serbia and Kazakhstan have also imposed quotas on grain shipments. Malaysia has announced a halt to chicken exports from 1 June, which will hit Singapore, Thailand, Japan and Hong Kong.

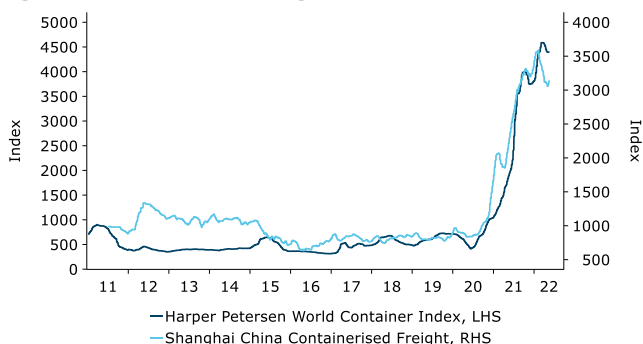
Export restrictions are not limited to food items. China and Russia are restricting fertiliser supplies as well.

Further, Russia has lost its Most Favoured Nation (MFN) status with G7 countries. This allows World Trade Organisation (WTO) members to impose a 35% tariffs on Russian exports. This is on top of any other sanctions or trade restrictions.

COVID-19-related economic shock and supply disruption

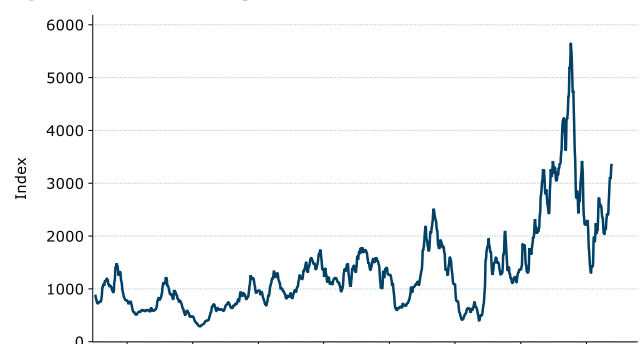
In addition to the trade restrictions in play, there are also massive challenges moving product around the world at present. The pandemic disrupted supply chains, and this problem is unlikely to be resolved until at least 2023. The difficulties in getting goods to market has encouraged importers to hold higher stocks, which has boosted demand. This additional demand has fuelled food price inflation and prompted many countries to restrict exports as they focus on their domestic market requirements.

Figure 16. Container freight rates



Source: Harper Petersen & Co., Shanghai Shipping Exchange, Baltic Exchange, Bloomberg, Macrobond, ANZ Research

Figure 17. Baltic Dry Index



Source: Baltic Exchange, Bloomberg, Macrobond, ANZ Research

Bringing it home

Food shortages are expected to worsen as climatic issues, energy shortages, the pandemic and the invasion of Ukraine all impact the world's ability to produce sufficient food. China appears to be one step ahead of the rest of the world in terms of securing additional food supplies. Their policy to increase their reserves of imported products is now serving them well as other countries scramble to import product at inflated prices.

High global food prices will cause hunger in developing nations and erode wealth globally, as it will continue to underpin inflation. Food-exporting nations like Australia and New Zealand may continue to benefit in a net sense from high commodity prices, but it's hard going for lower-income earners. In addition, as global prices become too expensive, demand will fall, as consumers' ability to purchase higher-value proteins such as dairy products and red meats is reduced. Demand for basic foodstuffs such as grains is not expected to wane to the same extent – people have to eat. Therefore the world will need to wait for global supply to increase before these markets rebalance and prices temper.

It's also worth noting that high food prices are not conducive to geopolitical stability. Hunger induces migration and topples governments. The food crisis is another factor to add to the growing list of potential geopolitical risks as the world tentatively emerges from the shadow of COVID-19.

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