Russia’s Invasion of Ukraine: What Impact on Agricultural Trade and Food Prices?

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Invasion of Ukraine

- Invasion of Ukraine an extreme shock undermining both economies and disrupting international trade

- Economic shock has two key dimensions:
  - impact of financial sanctions against Russia and loss of most favored nation (MFN) status
  - disruption to commodity markets

- Prospects for agricultural trade and global food security depend on physical impact of war, and extent to which global supply and demand react to disruption
Impact of financial sanctions

- Key financial sanctions:
  - removal of seven Russian banks from SWIFT
  - Russia’s central bank cannot access its foreign currency reserves

- Sanctions unprecedented – “immiseration”:
  - collapse of rouble, run on Russian banks, and likelihood of hyperinflation
  - recession and high unemployment in Russia
  - potential for debt default

- Some payments for oil, natural gas, fertilizer, and other commodities continue – but extensive evidence for “self-sanctioning”
Value of rouble

Rouble tumbles to record low

Exchange rate against US dollar

Russia invades Georgia

Russia seizes Crimea from Ukraine

Russia invades Ukraine

Putin becomes Russian president

Rouble hits a low of 118

Scale inverted
Source: Refinitiv
© FT

Source: Public Wire, February 28, 2022
Disruption to commodity markets

- Over past 30 years, Ukraine/Russia have become key agricultural exporters from Black Sea region:
  - 34%, 18%, 27% and 75% of world wheat, corn, barley, and sunflower oil exports respectively
  - trade out of Ukrainian Black Sea ports blockaded
  - key production areas in Ukraine affected by invasion – affecting planting decisions and harvesting uncertainty
  - agricultural commodity prices run up to ration demand

- Pressure on oil, natural gas and fertilizer prices

- Russia accounts for 25% of Europe’s supply of crop nutrients (nitrogen, potash and phosphate)
Ukraine/Russia: grain exports

Breadbasket to the World
Russia and Ukraine account for a quarter of global grains trade

- 102m tons: Russia and Ukraine
- 94m tons: U.S.
- 56m tons: Argentina
- 52m tons: EU
- 40m tons: Brazil
- 80m tons: Other

Source: International Grains Council
Note: Estimates for the 2021-22 season, for wheat and coarse grains
Ukraine/Russia: share of exports

Share in global markets, volume

<table>
<thead>
<tr>
<th></th>
<th>Russian Federation</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>14.2</td>
<td>12.6</td>
</tr>
<tr>
<td>Maize</td>
<td>15.3</td>
<td></td>
</tr>
<tr>
<td>Sunflower</td>
<td>19.6</td>
<td>4.3</td>
</tr>
<tr>
<td>Sunflower Oil</td>
<td>23.1</td>
<td>49.6</td>
</tr>
<tr>
<td>Wheat</td>
<td>24.1</td>
<td>10</td>
</tr>
</tbody>
</table>

Intra-EU trade excluded from computations.

Chart: David Laborde • Source: COMTRADE • Created with Datawrapper
Russian/Ukrainian wheat exports

Who buys Russian and Ukrainian wheat?

A quarter of the world’s wheat exports came from Russia and Ukraine in 2019.
Current invasion situation
Ukraine: wheat production

Ukraine: Wheat Production

Production
5-year average
2016-20, '000 metric tons

≤ 1,000
1,001 - 1,500
1,501 - 2,300

Percentages (%) shown on map indicate percent of national production.

Source: State Statistics Service of Ukraine (Rosstat for Crimea Oblast)
Average Wheat Production 2016-2020

USDA Foreign Agricultural Service
U.S. DEPARTMENT OF AGRICULTURE
Ukraine: corn production

Ukraine: Corn Production

Source: State Statistics Service of Ukraine (Rosstat for Crimea Oblast)
Average Corn Production 2016-2020
Ukraine: sunflower production

Ukraine: Sunflower Seed Production

Source: State Statistics Service of Ukraine (Rosstat for Crimea Oblast)
Average Sunflower Seed Production 2016-2020
Ukraine: Crop calendar

Winter barley is not on this list but follows the same calendar as wheat.

Source: Ukraine Ministry of Agriculture
**Export supply shock**

- Ukrainian and Russian wheat exports forecast to decline in total by 7 mmt in 2021/22

- Partially offset by Australia and India increasing exports by total of 3.5 mmt in 2021/22 due to increased production and available stocks

- US unlikely to take up additional slack in wheat market:
  - new crop already planted
  - low stocks due to poor 2020/21 harvest
  - worsening drought conditions in states such as Kansas
  - farmers facing input price squeeze

- Ukrainian corn exports forecast to decline by 6 mmt in 2021/22
2021/22 Grain Trade in Flux Amid Russia-Ukraine Conflict

Source: USDA/FAS, March 9, 2022
Forecast share of exports: 2021/22

2021/22 WHEAT EXPORTERS
- Ukraine: 10%
- Russia: 16%
- United States: 11%
- Australia: 13%
- European Union: 18%
- India: 5%
- Rest of World: 27%

2021/22 CORN EXPORTERS
- Ukraine: 14%
- United States: 33%
- Brazil: 17%
- Argentina: 22%
- Russia: 2%
- Rest of World: 12%

Source: USDA/FAS, March 9, 2022
Potential for trade diversion

Grains Trade Tumult
Rising exports from other growers won't fully offset Ukraine's losses

- February estimate
- March

100m tons

Source: IGC outlook for 2021-22 grain exports
US wheat stocks

December 2021 All Wheat Stocks
United States

United States Department of Agriculture
National Agricultural Statistics Service

January 12, 2022
US winter wheat/drought conditions

Winter Wheat Areas in Drought

Reflects March 8, 2022
U.S. Drought Monitor data

Approximately 73% of winter wheat production is within an area experiencing drought.

Source: USDA, March 10, 2022
Wheat futures prices

Wheat prices soar

CBOT wheat (\$ per bushel)

Source: Refinitiv
© FT
Natural gas prices

Natural Gas, Domestic Prices
USD per MMBtu

US price based on Natural Gas, next month, contract. European price based on Dutch TTF contract.
Chart: David Laborde • Created with Datawrapper
Nitrogenous fertilizer imports

Percentage of the Russian Federation and Belarus in nitrogenous fertilizer imports by country

Map: David Laborde • Source: COMTRADE • Created with Datawrapper
Potash production

Fertilizer Giants
Canada, Russia were the top potash producers in 2021

- Metric tons

<table>
<thead>
<tr>
<th>Country</th>
<th>Production (Metric tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>14.0M</td>
</tr>
<tr>
<td>Russia</td>
<td>9.0M</td>
</tr>
<tr>
<td>Belarus</td>
<td>8.0M</td>
</tr>
<tr>
<td>China</td>
<td>6.0M</td>
</tr>
<tr>
<td>Germany</td>
<td>2.3M</td>
</tr>
<tr>
<td>Israel</td>
<td>2.3M</td>
</tr>
<tr>
<td>Jordan</td>
<td>1.6M</td>
</tr>
<tr>
<td>Chile</td>
<td>900.0K</td>
</tr>
<tr>
<td>U.S.</td>
<td>480.0K</td>
</tr>
<tr>
<td>Spain</td>
<td>400.0K</td>
</tr>
<tr>
<td>Laos</td>
<td>300.0K</td>
</tr>
<tr>
<td>Brazil</td>
<td>210.0K</td>
</tr>
</tbody>
</table>

Source: USGS 2022 Mineral Commodity Summary
Note: Volumes are USGS estimates.
Potassium fertilizer imports

Percentage of the Russian Federation and Belarus in potassium fertilizer imports by country

Map: David Laborde • Source: COMTRADE • Created with Datawrapper
Fertilizer prices

Fertiliser prices hit new highs

CRU Fertiliser price index (Jan 2006=100)

Source: CRU
© FT
China has leapfrogged Russia to become Ukraine’s largest single trading partner - $18.9 billion in 2021

Key Ukrainian exports to China are iron ore, corn, and sunflower oil - $8.0 billion in 2021

Ukraine accounted for 30% of China’s corn imports in 2021

Ukraine important hub within China’s Belt and Road Initiative (BRI), e.g., port investments:

- COFCO (SOE) – $75 million investment in Mykolaiv grain terminal, and $50 million in port of Mariupol
- CHEC completed dredging of Chonomorsk
Impact of commodity market shock

- How China adapts to shock has clear potential to affect global markets for grains and oilseeds

- China’s wheat market case in point:
  - Tariff-rate quota (TRQ) applied to imports, quota filling for first time in 2021 (quota of 9.636 mmt, in-quota tariff of 1%, and over-quota tariff of 65%)
  - Increase in price of corn resulted in surge in demand for wheat in feed use in 2021, with some coming from imports (USDA/ERS, 2021)

- US wheat exports to China grew in 2020/21, but so did those of other exporters, e.g., Canada, and Australia

- China expected to purchase more on world market due to expectations of poor harvest in 2022
Chinese wheat consumption

China accounted for 19 percent of the world's wheat consumption in marketing year 2020/21.

- China, 19
- Others, 32
- European Union, 15
- India, 13
- United States, 4
- Russia, 5
- Pakistan, 3
- Turkey, 3
- Egypt, 3
- Iran, 2

Note: Market year (June–May) data as of March 2021. Others refers to all other nations that each account for less than 2 percent of global wheat consumption.

China’s imports of wheat fluctuated from 2000 to 2020, always falling short of the tariff-rate quota

Million metric tons

Notes: Data are for calendar years. The tariff-rate quota is the volume of wheat that can be imported at a 1-percent tariff. The quota was phased in from 2001 to 2004.
Global food security

War Threatens to Cause a Global Food Crisis

By JACK NICAS

The war in Ukraine has delivered a shock to global energy markets. Now the planet is facing a deeper crisis: a shortage of food. A crucial portion of the world's wheat, corn and barley is trapped.

NYT, 3/20/22

War Takes Toll on Food Supplies

By ALISTAIR MACDONALD

Ukrainian farmer Igor Borisov has 2,000 metric tons of corn from the fall harvest stuck in a warehouse behind Russian battle lines. Like other farmers across Ukraine, his crop for this year is also imperiled. Global concerns that Russia's area that was overrun on the first day of fighting. He had been away when the Russians invaded. His parents, who live close to his farm, called him to say hundreds of tanks were moving past the fields.

Russia's naval blockade and fighting around Ukraine ports has all but stopped maritime trade.

WSJ, 3/21/22
Global food security

- Invasion adds pressure on global food supplies, other factors already having driven up food prices:
  - poor harvests in South America
  - strong global demand and supply chain issues
  - reduced global stocks of grains and oilseeds
  - input cost squeeze

- Steep decline in grain and fertilizer exports has raised significant concerns about global food security

- “...The war between Ukraine and Russia, two of the world’s top crop producers, could lead to a food crisis ‘on the global scale’...” Julien Denormandie, French farming minister (Reuters, 3/21/22)

- “...Ukraine has only compounded a catastrophe on top of a catastrophe...There is no precedent even close to this since World War II...” David M. Beasley, World Food Program (NYT, 3/20/22)
Global food prices

Food Fears
Food and agriculture prices hit levels not seen since Arab Spring

Source: UN/FAO March 2022
Global grain stocks

Source: UN/FAO March 2022
Global food security

- Increased cost of buying food by $23/month (World Food Program, 3/18/22) (extreme poverty = < $1.90/day)
- UN forecasting up to 824 million people going hungry – an increase of 8 percent
- Net importing countries in MENA region very dependent on imports from Ukraine/Russia – clear potential to create social and political unrest
- Any grain export sanctions on Russia will exacerbate world food shortages, penalizing populations that are already food insecure
- Real concern other exporting countries will adopt “beggar-thy-neighbor”-type export policies that intensified food price spikes in late-2000s
Countries most dependent on Ukrainian wheat exports

- **Lebanon**: 119
- **Moldova**: 1
- **Qatar**: 11
- **Tunisia**: 223
- **Pakistan**: 302
- **Indonesia**: 708
- **Ethiopia**: 112
- **Egypt**: 690
- **Malaysia**: 92
- **Jordan**: 38
- **Thailand**: 131
- **Morocco**: 208
- **Other**: 925

**Bar height = total import value ($mn)**

**Share of the recipient country’s total wheat imports (%)**

Source: Comtrade

© FT

Data from 2020 except for Tunisia which are from 2019