

Transport and logistics – key drivers in global competitiveness

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In the global trade perspective, transportation, storage and handling costs can become game-changers. Building on *agri benchmark*'s database, we analyze the entire supply chain, from farm gate to the importing country. To illustrate, we compare three of our typical farms for the 2013-2015 period in Brazil (Matto Grosso), the United States (Iowa), and Ukraine (Poltava), the major corn-exporting countries. Brazilian corn tends to be exported to Asia (South Korea, Japan, Taiwan), Ukrainian corn to Egypt and Spain, and the United States' corn to various locations (Japan, Mexico, Colombia). In this analysis, we compare farm gate prices, domestic and ocean freight rates of corn from these 3 global producers to two common export destinations: Egypt and Japan.

Depending on the country, domestic transportation costs can be very important. In Brazil, trucks are the major means of transport for grains (60%) and are approximately 0.04 USD per ton-kilometer (tkm) for this route. In Ukraine, rail is the most common means to export grains (65%), averaging 0.02 USD/ tkm. The vast majority of the U.S. Corn Belt, including our typical farm in Iowa, use barges along the Mississippi river for long-distance transportation to the Gulf of Mexico. Barges result in the cheapest domestic transport, at 0.01 USD/ tkm.

Figure 1: Domestic and ocean distances and transportation rates for chosen routes. 2013-2015 average

| Farm location | Distance to port, (km), mode | Total dom trans USD/t,(USD/tkm) | Port of origin | Dest | Distance (NM) | Ocean freight (USD/t) |
|------------------------|------------------------------|---------------------------------|------------------|-------|---------------|-----------------------|
| Matto Grosso, Brazil | 2,000 (trucks) | 87 (0,04) ¹ | Santos, Brazil | Egypt | 6,200 | 49 |
| | | | | Japan | 11,300 | 29 |
| Poltava, Ukraine | 550 (rail) | 12 (0,02) ² | Odessa, Ukraine | Egypt | 1,300 | 14 |
| | | | | Japan | 9,000 | 40 |
| East Central Iowa, USA | 2,250 (truck, barge) | 24 (0,01) ³ | New Orleans, USA | Egypt | 6,400 | 35 |
| | | | | Japan | 10,000 | 40 |

Sources: domestic transportation costs—¹IMEA, Matto Grosso (average of Aug-Jan, main safrinha export season); ²Ukrriichflot; ³AMS/ USDA. Ocean freight costs--Brazil to Egypt, Brazil to Japan (via Cape of Good Hope) from Bloomberg; Ukraine to Japan from Ukrriichflot; USA to Egypt, USA to Japan (via Panama Canal), Ukraine to Egypt from International Grains Council.

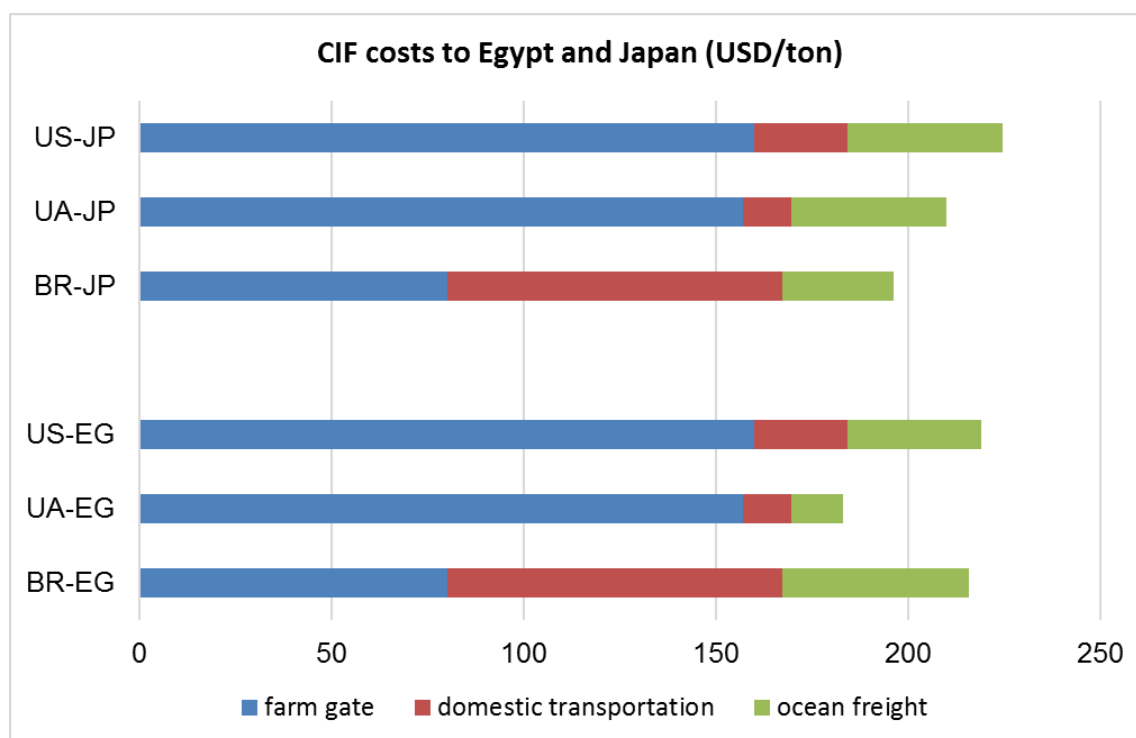
Ocean freight rates between the port of origin and the destination port are compared. These rates are competitive and are very volatile depending on the overall movement of global freight capacity, which is obviously very inelastic.

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However, in the long run, the rates for different routes move in parallel, and therefore we assume that changes in ocean freight rates do not fundamentally impact the competitiveness of different origins.

Finally, we compare the sum of farm gate prices, domestic, and ocean freight rates per ton to generate CIF-costs to assess competitiveness. Farm gate prices are taken from the respective typical farm, and reflect the specific marketing decisions in the local market. Among the three producers exporting to Egypt, Ukraine is the lowest cost provider at 183 USD per ton, due to its proximity to the destination. When it comes to corn exports to Japan, our typical farm in Brazil is the most competitive producer with cost at 196 USD per ton. The low farm gate price in Brazil (80 USD per ton) reflects the long distance from the port and a depreciating local currency.

Figure 2: Farm gate price, domestic, and ocean transportation costs to Egypt and Japan, 2013-2015 average (USD/ton)



Source: Own calculations based on agri benchmark data. agri benchmark currently does periodic transportation and logistics studies to complement the farm-level data.

This brief example illustrates how important it is to understand the value chains and related costs when global competitiveness is at stake. At the same time, newcomers such as Ukraine, are heavily investing in their grain handling infrastructure, which can change their competitiveness. It is also decisive for net-importing countries to understand domestic transport costs because that determines farm gate prices as well. At *agri benchmark* care about transport and logistics. It's part of understanding agriculture worldwide