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Implications of Rising Ocean Freight Rates for Agri-food Product Markets (Summary)

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This is a summary of “Implications of Rising Ocean Freight Rates for Agri-food Product Markets” by Michael K. Adjemian, Delmy L. Salin, and William Wilson.¹ This research and analysis received funding from USDA’s Agricultural Marketing Service (AMS) through cooperative agreement number 21-TMTSD-GA-0013. The opinions and conclusions expressed are the authors’ and do not necessarily reflect the views of USDA or the Agricultural Marketing Service. The full report is available online at <https://agecon.uga.edu/people/faculty/michael-adjemian.html>.

WHAT IS THE ISSUE?

Toward the end of 2020, as the global economy began to recover from COVID-19-related shutdowns, freight rates for ocean shipping (both container and bulk) increased rapidly. By February 2022, container rates reached their highest levels on record. Simultaneous with soaring rates, lockdowns and traffic increased congestion at U.S. ports. Agricultural stakeholders grew concerned that the rate jumps and traffic congestion could negatively impact U.S. agricultural exports. Seaborne shipping is central to agricultural trade. More than 80 percent of the world trade in grains and oilseeds ships by sea—typically, by dry bulk carriers. Many other agricultural commodities are transported via container vessels.

The study’s two main objectives are to describe the factors contributing to rising ocean freight rates and to quantify how rates can affect outcomes impacting producers of U.S. agricultural products—i.e., export market shares and commodity prices. The analysis conducted on these data will serve as a useful retrospective example to inform policy makers in the event of future ocean shipping shocks.

HOW WAS THE STUDY CONDUCTED?

The researchers searched for and quantified causal relationships in the data (freight rates, ocean fleet size, global exports, crude oil prices, port congestion, and global bulk agricultural exports), to understand how ocean freight rates were determined and how they affected U.S. agricultural producers. In an auxiliary approach, the researchers built and estimated

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a cost-minimization model by Monte Carlo simulation to show how U.S. export market share was expected to change with a rise in ocean shipping costs. In addition, the report identifies U.S. policy actions that have been taken to address the congestion and associated export problems at U.S. ports.

WHAT DID THE STUDY FIND?

The researchers quantified the volumes and values of waterborne container shipments of U.S. agricultural exports, relative to other modes (i.e., bulk and air) as follows:

- Waterborne container shipments accounted for just around a quarter (averaging 24 percent monthly, over the last 5 years) of port-level U.S. agricultural exports by volume.
- Despite that modest share by volume, container shipments accounted for over half of the value of U.S. agricultural exports (54 percent over the last 5 years).

The researchers found that ocean freight rates for both bulk goods and containers increased with the demand for shipping services, fuel prices, and destination port congestion. Conversely, rates fell with increases in fleet capacity. According to the study's Monte Carlo simulation, the United States would gain global corn- and soybean-export market shares when ocean freight rates rise—at least in the short run. Those predictions were consistent with the actual increases in export market share of both U.S. corn and soybeans between marketing years 2019/20 and 2020/21.² All of the study's findings were consistent with the USDA's forecast that the value of U.S. agricultural exports will set a record high in fiscal year 2022—even in the face of elevated ocean freight rates. Nonetheless, the research also showed how increases in ocean freight prices could potentially lead to negative consequences for U.S. exporters, including depressed export levels in the short run (although these findings were not statistically significant). The researchers note, that even if rising rates lower domestic export levels, the United States can still gain market share if its export competitors suffer an even larger reduction.

Because the analysis found port congestion raised freight rates, the researchers discuss current related U.S. policy actions. These include (1) the development of a Federal portal to convey detailed supply data, (2) provisions in the newly-passed Ocean Shipping Reform Act of 2022, and (3) targeted infrastructure investments in U.S. ports.

PREFERRED CITATION

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² U.S. marketing years for soybeans and corn run from September-August.