

## **Economic Effects of U.S. Trade Tensions in the Face of Domestic Agricultural Support**

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The global agricultural market is increasingly integrated, with global value chains linking sectors across countries and contributing to sector returns and growth. Significant welfare gains have been achieved by global reductions to tariff barriers and domestic agricultural support. Stronger sector linkages also mean that effects from tariffs and domestic support are more widely transmitted.

Recent years brought seismic shifts in global trade policy, U.S. farm payments, and global swine stocks that pose far-reaching and long-lasting effects on agriculture. The global agricultural sector saw average tariff levels rise precipitously after decades of tariff reductions, with trade actions by U.S. trading partners highly concentrated on agricultural products. Rising tariffs on U.S. agricultural goods created price incentives for increasing production in other countries and prompted U.S. farm payments as a policy response to support farm incomes.

The USDA instituted the Market Facilitation Program (MFP) to assist U.S. farmers impacted by retaliatory actions of U.S. trading partners in 2018 and 2019, which included payments to U.S. producers of affected commodities. The MFP programs differed in scope and design in each year implemented. MFP 1 (2018) consisted of yield-based payments to producers totaling up to \$12 billion while MFP 2 (2019) was comprised of direct producer payments covering a broader set of agricultural products totaling \$14.5 billion. This research examines the economywide effects of U.S. trade tensions and retaliation from trade partners in the presence of alternate U.S. producer support programs. We simulate the 2018–19 retaliatory tariffs between the U.S. and trade partners in tandem with U.S. domestic support to understand how alternative domestic policy scenarios for U.S. agricultural producers compare.

We use the GTAP-BIO general equilibrium model with data from an updated version of the GTAP 9 database specific for this model to analyze the simulated effects on output, prices, and trade of the affected agricultural commodities, as well as changes to the U.S. composition of processed and unprocessed soy products for domestic consumption and export. The GTAP-BIO model improves the treatment of biofuel by-products and the representation of global land use, and captures the direct and indirect links between crop, biofuel, food, feed, and vegetable oil industries.<sup>1</sup> GTAP-BIO builds on the GTAP-E model<sup>2</sup> to incorporate the potential for biofuels to substitute for petroleum products, and biofuels are also introduced into this GTAP Data Base.<sup>3</sup> The modified data base includes data on production, consumption and trade of biofuels including grain based ethanol, sugarcane ethanol, and biodiesel from oilseeds, as well as data on biofuel by-products. This is critical given the importance of

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<sup>1</sup> Birur, Dileep, Thomas Hertel and Wally Tyner (2008): "Impact of Biofuel Production on World Agricultural Markets: A Computable General Equilibrium Analysis," GTAP Working Paper No. 53.

<sup>2</sup> See Burniaux, Jean-Marc and Truong P. Truong (2002): "GTAP-E: An Energy-Environmental Version of the GTAP Model," GTAP Technical Paper No. 16, Revised. The model was modified by McDougall, Robert and Alla Golub (2007): "GTAP-E: A Revised Energy Environmental Version of the GTAP Model," GTAP Research Memorandum No. 15.

<sup>3</sup> Taheripour, Farzad, Dileep Birur, Thomas Hertel and Wally Tyner (2007): "Introducing Liquid Biofuels into the GTAP Data Base," GTAP Research Memorandum No. 11.

soybeans in U.S. agricultural production and trade and the direct and indirect impacts of substantial tariffs placed on U.S. soybeans resulting supply chain disruptions.

Decision makers will benefit from considering the differing impacts of domestic support programs within a general equilibrium framework. The conflicting and compounding effects from these trade actions and agricultural support should not be evaluated in isolation. Agricultural sectors are inter-linked, with grains and oilseeds serving as inputs for livestock and meat production, and land use decisions for row crops, specialty crops and pasture linked. This works aims to provide insight into the effects of the recent trade and domestic policy shocks affecting the U.S.