

ERS Contributions to GTAP: An Activity Report for June 2010-April 2011

Free Trade Agreement Research

The GTAP database 7.1 and model played a central role for assessing the impact of multiple free trade agreements (FTAs) on U.S. agricultural trade [9]. It would not be possible to assess the individual impacts of FTAs without the use of the GTAP framework with its explicit treatment of bilateral tariffs and trade flows. The United States signed successive trade agreements with Colombia, Panama, and Korea between November 2006 and June 2007. Each agreement, however, still awaits U.S. congressional approval before it can be implemented. The 2004 base year was deemed outdated for conducting simulations of these future FTAs, thus the database was re-based. All three pending agreements are comprehensive trade agreements (covering all goods and services) that contain market access provisions of interest to U.S. agriculture. Other FTAs implemented in recent years between ASEAN and China and ASEAN and Australia and New Zealand reduce trade barriers among major agricultural trading nations that have strong agricultural ties to the United States. As an agricultural exporter, the United States competes in all three markets as exhibited in the GTAP database. The third-country trade impacts were assessed by implementing these agreements in the GTAP framework.

The simulations were implemented by applying the reductions or eliminations of the import tariff rates that were agreed upon in each FTA. It was assumed that ASEAN members would attain duty-free access to each other's markets by 2009, with the exception of rice (paddy and processed). To update tariffs it was necessary to eliminate those tariffs on trade between ASEAN members prior to extending the FTA with nonmembers of ASEAN. FTAs often allow for long implementation periods in the reduction of tariff rates, in some cases as long as 20 years. In this study, using the GTAP static model, the transition periods are ignored, and the reductions in protection simply assume the full change in tariffs after the transition period. A pre-simulation growth scenario was performed prior to implementing the agreements. Information from USDA's global macroeconomic projections for 2014 was incorporated to rebase the GTAP database. Country and commodity-specific alterations to the GTAP database were also made. U.S. beef exports to Korea, which diminished in 2004, were assumed to resume to the pre-2004 levels that existed prior to the breakout of BSE in the United States.

Biofuels and Others

The v6. GTAP data base and the GTAP model also are used to explore the implications of global biofuel mandates [1] and of the interactions between global biofuel policy and climate-policy [2] on net carbon dioxide (CO₂) emissions from fossil fuels and land use change. Using the GTAP-BIO model (Taheripour et al., 2007), the data base is updated using exogenous shocks to population, biofuel policies, energy prices capital stocks, labor supply, and technological progress. In [1], simulations are performed on two policy scenarios, in which a narrow (U.S., EU, and Brazil) and a wider set of countries are subject to biofuel mandates. In [2], simulations are performed based on three policy scenarios: (1) global mandates for first-generation biofuels; (2) a price of US\$ 15 per ton CO₂ imposed on Annex I countries; and (3) biofuel mandates combined with the Annex I country CO₂ price.

The same database and GTAP-Bio model also are utilized to analyze how energy price volatility is likely to be transmitted to agricultural commodities in the future, and how changes in energy policy regimes affect the inherent volatility of commodity prices in response to traditional supply-side shocks. Hertel and Beckman (2011); Beckman and Hertel (2010); and Hertel and Beckman (2010) examine the transmission of energy price volatility to agricultural commodities in the era of U.S. first generation biofuel production. Beckman et al. (2011) and Hertel and Beckman (2010) add EU first-generation mandates.

Publications and Other Outputs

1. Beckman, J., C. Jones, and R. Sands, "A Global General Equilibrium Analysis of the Interactions between Biofuel Mandates and Greenhouse Gas Mitigation Policy", Paper presented at 13th Annual Conference on Global Economic Analysis, Penang, Malaysia, June 2010.
2. Beckman, J., C. A. Jones, and R. Sands. 2011. "A Global General Equilibrium Analysis of Biofuel Mandates and Greenhouse Gas Emissions." *Amer. J. Agr. Econ.* 1–8; doi: 10.1093/ajae/aaq086
3. Beckman, J. and T. Hertel. 2010. "Structural Change in Agricultural Markets Following the Biofuels Boom." Selected Paper Presented at the AAEA Annual Meeting, Denver, Colorado.
4. Hertel, T. and J. Beckman. 2010. "Commodity Price Volatility in the Biofuel Era: An Examination of the Linkage between Energy and Agricultural Markets." Selected Paper at the NBER Conference on Biofuels, Cambridge, Massachusetts.
5. Beckman, J., T. Hertel, F. Taheripour, and W. Tyner. 2011. "Structural Change in the Biofuels Era." *European Review of Agricultural Economics* (forthcoming).
6. Hertel, T. and J. Beckman. 2011. "Commodity Price Volatility in the Biofuel Era: An Examination of the Linkage between Energy and Agricultural Markets." *NBER: Agriculture, Energy and the Environment* (forthcoming).
7. Hertel, T. and J. Beckman. 2010. "Structural Change in the Biofuels Era." Invited Presentation at the European Review of Agricultural Economics Conference, Berlin, Germany.
8. Keeney, R. and A.M. Leister. "International Inequality Impacts of Multilateral Liberalization," 14th Annual Conference on Global Economic Analysis, Venice, Italy, June 16-18, 2011.
9. Wainio, John, Mark Gehlhar, and John Dyck. *Selected Trade Agreements and Implications for U.S. Agriculture*. ERR-115, U.S. Department of Agriculture, Economic Research Service. April 2011.