



USDA Economic Research Service GTAP Consortium Agency Report 2017-2018

GTAP Advisory Board Representatives, your annual agency report of GTAP usage at your organization should contain, but not be limited to the types of items listed below. Please include details for activities undertaken since the previous year's advisory board meeting in June. When your report is complete, please email it to Ginger Batta (gbatta@purdue.edu).

1. GTAP Model and Data Base Usage

USDA's Economic Research Service (ERS) uses resources from GTAP for both data and modeling purposes. The data support two computable general equilibrium (CGE) models used at ERS: MTED-GTAP is used for analysis of trade policy in the Market and Trade Economics Division; the Future Agricultural Resources Model (FARM) is used for long-term scenario analysis in the Resource and Rural Economics Division.

The MTED-GTAP model is based on the GTAP model in GEMPACK. The FARM model is based on GTAPinGAMS software published by Tom Rutherford. Both models have been extended in many ways depending on questions that were addressed.

2. Publications

Arita, S., Beckman, J., and L. Mitchell. 2017. "Reducing Transatlantic Barriers on US-EU Agri-food Trade: What are the Possible Gains?" *Food Policy* 68: 233-247.

Beckman, J., Gooch, L., Gopinath, M., and R. Landes. 2018. "Market impacts of China and India meeting biofuel targets using traditional feedstocks." *Biomass and Bioenergy* 108: 258-264.

Beckman, J., Gopinath, M., and M. Tsigas. 2018. "The Impacts of Tax Reform on Agricultural Households." *American Journal of Agricultural Economics* (forthcoming).

Rosenzweig, C., A. Ruane, J. Antle, J. Elliott, M. Ashfaq, A. Chatta, F. Ewert, C. Folberth, I. Hathie, P. Havlik, G. Hoogenboom, H. Lotze-Campen, D. MacCarthy, D. Mason-D'Croz, E. Mencos Contreras, C. Müller, I. Perez-Dominguez, M. Phillips, C. Porter, R. Raymundo, R. Sands, C.-F. Schleussner, R. Valdivia, H. Valin, K. Wiebe. 2018. "Coordinating AgMIP data and models across global and regional scales for 1.5 °C and 2.0 °C assessments," *Philosophical Transactions of the Royal Society A*, DOI: 10.1098/rsta.2016.0455

Sands, R. 2018. "U.S. Carbon Tax Scenarios and Bioenergy," *Climate Change Economics* 9(1)

3. Presentations

Beckman, J. December 2017. "Export Interventions in Agriculture." Paper presented at the IATRC Annual Meeting, Washington DC.

Sands, R. June 2017. "Scenarios of Global Diets and the Impact on Land Resources." Presented at the annual GTAP meeting, Purdue University.

4. Special Reports

Beckman, J., Sands, R., Riddle, A., Lee, T., and J. Walloga. 2017. *International Trade and Deforestation: Potential Policy Effects via a Global Economic Model*. Economic Research Report No. 229, USDA.

5. Projects

1. Scenarios of Global Diets and the Impact on Land and Water Resources: This project extends capabilities of the ERS FARM model to simulate long-run effects of alternative diets on land use and water resources globally. The study has three primary objectives: (1) improve the representation of consumer food demand in global economic models, especially in regions with rapidly increasing incomes; (2) better represent interindustry linkages from food consumed to derived demand for land; and (3) evaluate alternative frameworks for constraints imposed by water availability.

2. Stanford Energy Modeling Forum: EMF-32 is a study of potential U.S. carbon taxes at various levels and alternative ways to recycle carbon tax revenue. The FARM paper highlights the role of bio-electricity with carbon dioxide capture and storage. EMF-33 is a study on global land use and biomass, with participation of ten modeling teams, including FARM.

3. Agricultural Model Intercomparison and Improvement Project (AgMIP): The FARM model is used for ERS participation in the AgMIP global economics group. AgMIP multi-model comparisons typically simulate economic responses to multiple drivers such as growth in population, growth in per-capita incomes, and changes in agricultural productivity due to climate change.

4. The MTED-GTAP model is currently being used to inform U.S. policy makers on impacts of trade policy. This work is using the pre-release version 10 data base.

5. The Global Landscape of Agricultural Trade (GLAT) is a project that began with an ERS qualitative study of trends in trade and trade policy. The next step (ongoing for 2018) is to use MTED-GTAP to provide a quantitative analysis of topics described in the ERS report. These include: increasing market access, removing export interventions, changing global agriculture domestic support, and evaluating non-tariff measures.

6. Other Activities

Provided briefings on the modeling of The Global Landscape of Agricultural Trade project to FAS and the USDA Office of Chief Economist.