

The GTAP Advisory Board Meeting, June 2001

Economic Research Service of the United States Department of Agriculture

GTAP related activities of the Economic Research Service: 2000-2001

The Economic Research Service (ERS) of the U.S. Department of Agriculture has contributed to and utilized the products of the Global Trade Analysis Project since its inception. This provides a short summary of recent and forthcoming activities.

Contributions to GTAP Products

Trade data

Mark Gehlhar continues to contribute the bilateral trade and transport database for GTAP database 5. Additional work on concordance construction was completed. Complete trade concordances are now available for HS96 and HS88 with links to the GTAP sector classification, ISIC, CPC, and SITC. There are now detailed descriptions available at the HS 6-digit level on concordances. Belgium and Luxembourg will be separated in the trade data for future versions. These countries did not report separately to the United Nations until 1999. Time-series data is being revised for final version. A more detailed industry-level data for the food processing sectors was created that can be aggregated to the GTAP level.

1996 US-IO

Ken Hanson and Agapi Somwaru contributed the United States (US) Input-Output (I/O) accounts for the GTAP version 5 database. The US IO was derived from the 1992 benchmark Input-Output accounts published in 1997 by the US Department of Commerce, Bureau of Economic Analysis (*Survey of Current Business*, November 1997). For modeling projects at USDA-ERS, the detailed 1992 I/O accounts have been updated to 1996. For the GTAP project, they have aggregated the 1996 I/O accounts to the GTAP database version 5 sectors.

The US I/O accounts, consists of about 500 commodities and industries, classified according to the 4-digit standard industry classification (SIC) codes, except for agriculture. The 17 agricultural sectors are aggregated according to a commodity grouping. Three sectors in the US I/O accounts had to be further disaggregated to accommodate the sectoral detail of the GTAP database.

1997 China IO

Zhi Wang contributed the China's 1997 IO table to version 5 GTAP database.

ERS's work on agricultural protection data for GTAP database version 5

A team at Market and Trade Economics Division (MTED), ERS, contributed the agricultural protection data on the three disciplines: market access, export subsidies, and domestic support.

The team obtained detailed information allowing for further reclassification of the producer support estimates as measured by the OECD. Another dimension of this disaggregation was based on WTO notifications of specific programs, where minimally distorting payments (green) were separated from trade distorting-type of support payments (amber).

GTAP related products

Mark Gehlhar performed simulations with the newly specified domestic support in the GTAP database version 5, prerelease 2, to measure the impacts of reducing the AMS ceiling and leveling support on a commodity basis.

Roy Darwin, Kevin Ingram, John Sullivan, Wesley Nimon, and Vince Breneman continue to revise the land and water resources database used by the Future Agricultural Resources Model (FARM), a modified version of the first GTAP database and model, to be compatible with version 5 of the GTAP database. Work on this database was suspended last year so as to devote resources to research on the environmental impacts of trade agreements and the agricultural impacts of greenhouse gas emissions. It is now back on track. A GTAP V5 compatible land and water resources database is scheduled for completion by October 1, 2001. Documentation is scheduled for completion by January 1, 2002. We are using resources immediately available to ERS. Once completed other consortium members will be asked for help in upgrading the database through one or another mechanism (e.g., GTAP's Proposal on Integrated Assessment of Climate Change Policy to the U.S. Department of Energy).

Research Topics

Agricultural Trade Reforms

A team of MTED, ERS, analyzed the full elimination of agricultural policy distortions to understand what is in stake in global agricultural negotiations. The global costs and benefits of a full reform are decomposed and analyzed by country, commodity, and type of policy. This work was included in ERS's report on the Agricultural Policy Reform in the WTO: The Road Ahead.

Alternative assumptions regarding treatment of land-based payments for the United States was assessed by comparing results from the current version of the database to an alternative where land payments are apportioned evenly across all land uses. The assumption makes a big difference for welfare and sectoral output changes from trade liberalization. This is used as a discussion paper at Special Session on Domestic Agricultural Support at the Fourth Annual Conference on Global Economic Analysis 2001

World Food Security

A team of MTED, ERS, analyzed issues of trade liberalization and food security in low-income countries.

Trade and the Environment

In collaboration with staff from the U.S. International Trade Commission and the U.S. Environmental Protection Agency, Roy Darwin prepared a plan of work to conduct an analysis of potential environmental impacts of the Free Trade Area of the Americas under Executive Order 13141, *Environmental Review of Trade Agreements*. ERS's role in this endeavor is to estimate domestic and foreign changes in land and water resources and domestic changes in soil erosion, nitrogen and phosphorus losses, greenhouse gas emissions, and other agriculturally related environmental effects. The proposed research was outlined in a report to the U.S. Office of the Trade Representative's Trade Policy Staff Committee. ERS also plans to evaluate potential environmental impacts of World Trade Organization proposals for agriculture and services with a revised version of FARM later this year.

Roy Darwin revised ERS's Global Climate Change Impacts briefing room to reflect results from recent FARM-based analyses of greenhouse gas emissions. He also wrote an Agricultural Information Bulletin that discussed how global climate change might affect food security in developing countries.

Publications

1. Monographs

Wang, Zhi. "WTO: China and the World" (with Shan-tong Li, Fan Zhai, and Lin Xu), China Development Press, 2000.

2. Articles

Darwin, R.. "Climate Change and Food Security." (Agricultural Information Bulletin) U.S. Department of Agriculture, Economic Research Service, Washington, DC, 2001

Darwin, R.F. and D. Kennedy. "Economic Effects of CO₂ Fertilization of Crops: Transforming Changes in Yield into Changes in Supply." *Environmental Modeling and Assessment* 5(3):157-168, 2001

Darwin, R. F. and R. S. J. Tol. "Estimates of the Economic Effects of Sea Level Rise." *Environmental and Resource Economics* 19(2):113-129, 2001

Diao, Xinshen and Agapi Somwaru, 2000. "An Inquiry on General Equilibrium Effects of MERCOSUR-An Intertemporal World Model," *Journal of Policy Modeling*, 22(5):557-588.

Diao, Xinshen and Agapi Somwaru, 2001. "A Dynamic Evaluation of the Effects of a Free Trade Area of the Americas—Intertemporal, Global General Equilibrium Model," *Journal of Economic Integration*, 16(1):21-47.

Ianchovichina, Elena, Roy Darwin, and Robbin Shoemaker. 2001. "Resource Use and Technological Progress in Agriculture: A Dynamic General Equilibrium Analysis." *Ecological Economics* (in press).

Wang, Zhi and G. Edward Schuh, "The Impact of Economic Integration Among Taiwan, Hong Kong and China: A Computable General Equilibrium Analysis." *Pacific Economic Review*, 5(2):229-262, *Special Issue on Hong Kong Reversion to China, May 2000*.

Shag-Jin Wei, Ligang Liu, Zhi Wang, Wing Woo. "The China Money Puzzle: Will Devaluation of the Yuan Hurt Hong Kong Dollar?" *China Economic Review, an International Journal*, Vol. 11(2):1-18, December 2000.

3. Chapters in Edited Books & Monographs

Wang, Zhi. "The Road to Economic Recovery in Asia -- A Recursive Dynamic CGE Analysis" in Yu ZhongXian and Danel Xu eds. "*From Crisis to Recovery – Is East Asia Rising Again?*" World Scientific Publishing, 2000.

4. Invited Speeches

Wang, Zhi. "The Road to Economic Recovery in Asia--A Recursive Dynamic CGE Analysis" (with Dian Qing Xu), Presented at Workshop on Financial Crisis in East Asia, Taipei, Taiwan, January 23, 2000

5. Unpublished Conference Papers

Darwin, R.F. "Modeling Environmental Issues with the Future Agricultural Resources Model: Past, Present, and Future." U.S. International Trade Commission on June 8, 2000.

Darwin, R.F. "Adaptation in Process-Based Integrated Impact Models." Sixth Workshop on Climate Change Impacts and Integrated Assessment, Snowmass Village, CO, July 26 - August 4.

Diao Xishen, A. Somwaru and T. Roe. "A Global Analysis of Agricultural Reform in WTO Member Countries," at Fourth Annual Conference on Global Economic Analysis, June 27-29, 2001

Xinshen Diao and Agapi Somwaru. "Impact of MFA Phase-Out on the World Economy—An Intertemporal, Global General Equilibrium Analysis," at Fourth Annual Conference on Global Economic Analysis, June 27-29, 2001

MacDoland Steve, X. Diao, A. Somwaru, and F. Tuan. "The Agreement on Textiles and Clothing: Impact on China's Cotton Industries in a CGE Framework," presented at the 2001 China International Cotton Conference, June 26-28, 2001, Guilin, China

Elbehri, A., L. Hoffman, M. Ash, and E. Dohlman. "Global Impacts of Zero-for-zero Trade Policy in the World Oilseed Market: A Quantitative Assessment" paper presented at the International Agricultural Trade Consortium Meeting, May 2001, Washington DC.

Elbehri, Aziz and Susan Leetmaa. "How significant are export subsidies to agricultural trade? Trade and welfare implications of global reforms," paper presented at the AAEA Annual Meetings, August 5-8, 2001, Chicago, Illinois

Elbehri, A., T.W. Hertel, M. Ingco, and K.R. Pearson, "Partial Liberalization of the World Sugar Market: A General Equilibrium Analysis of Tariff-Rate Quota Regimes," Paper presented at the AAEA Annual Meetings, July 30-August 2, 2000, Tampa, Florida

Gehlhar, M., F. Nelson. "Treatment of Domestic Agricultural Support and Implications for Reductions: The case for the United States" for presentation at special session on Agricultural Support at Fourth Annual Conference on Global Economic Analysis June 27-29, 2001

Wang, Zhi M. Gehlhar "Impact of MFA phase-out with China's inclusion in the Agreement on Textiles and Clothing" at Fourth Annual Conference on Global Economic Analysis, June 27-29, 2001

Wang, Zhi. "The Asia Financial Crisis and Global Adjustment: Implications for U.S. Agriculture" Paper presented at international conference The Asia Crisis, II, January 4 - 5, 2000, Seattle, Washington.

Wang, Zhi. "The Global Economic Impact of China Joining the World Trade Organization" Paper presented at international conference Development through Globalization, July 5-7, 2000, Shanghai, China.

Wang, Zhi. "The Emergence of a "Greater China" and its Impact on World Trade – A Computable General Equilibrium Analysis" Paper presented at international conference "Greater China and the World Economy", July 17-18, 2000, Hong Kong.

6. Other Publications

Canning, Patrick and Marinos Tsigas. "Regionalism, Federalism, and Taxation: A Food and Farm Perspective." TB 1882, USDA/ERS, March 2000

Canning, Patrick and Marinos Tsigas. "Current Tax Policy vs. a Flat Tax -- How Do Taxes Affect Food Markets?" Current Issues AIB No. 747-04, USDA/ERS, September 2000

Canning, Patrick and Marinos Tsigas. "Effects on U.S. Agriculture" Agricultural Outlook, October, USDA/ERS, 2000

Canning, Patrick A. "The Global Oil Shortage: National and Regional Effects to the U.S. Economy" Staff Analysis submitted to Council of Economic advisors and Office of ERS Administrator, Oct. 2000.

Diao Xishen, A. Somwaru and T. Roe. "A Global Analysis of Agricultural Reform in WTO Member Countries," In: *The Road Ahead: Agricultural Policy Reform in the WTO*, Agricultural Economic report No. 797, USDA/ERS, January 2001.

Elbehri A., "Agricultural Export Subsidies," In: *GTAP Database Version 5 Documentation*, GTAP Web Site (forthcoming).

Elbehri, A., "Welfare Implications of Liberalizing Preferential Quotas," In: *The Road Ahead: Agricultural Policy Reform in the WTO*, Agricultural Economic report No. 797, USDA/ERS, January 2001.

Elbehri, A., and K.R. Pearson, "Implementing Bilateral Tariff Rate Quotas in GTAP using GEMPACK", *GTAP Technical Paper #18*, December 2000

Young, C. Edwin, Mark Gehlhar, Frederick Nelson, Mary E. Burfisher, and Lorraine Mitchell (2001) "Options for Reducing the AMS in OECD Countries" Background for Agricultural Policy Reforms in the WTO: *The Road Ahead*. USDA, Economic Research Service, ERS-EO1-001

M. Trueblood and S. Shapouri. "Implications of Trade Liberalization on Food Security-of Low Income Countries," In: *The Road Ahead: Agricultural Policy Reform in the WTO*, Agricultural Economic report No. 797, USDA/ERS, January 2001.

Wang, Zhi, Mathew Shane and Jone Dyck. Participate in the analysis of impact of oil price shock on U.S. agricultural exports (with) for the office of USDA chief economist (Staff Analysis). Constructed a 17-region and 27-sector CGE model based on version 4 GTAP database to conduct the analysis, 2001

7. Manuscripts and Working Papers

Darwin, R.F. 2001. "Effects of Greenhouse Gas Emissions on World Agriculture, Food Consumption, and Economic Welfare." Submitted to *Climatic Change*.

Wang, Zhi. "The Emergence of a 'Greater China' and its Impact on World Trade – A Computable General Equilibrium Analysis" Submitted to *Journal of Comparative Economics* for publication consideration