



Center for Global Trade Analysis

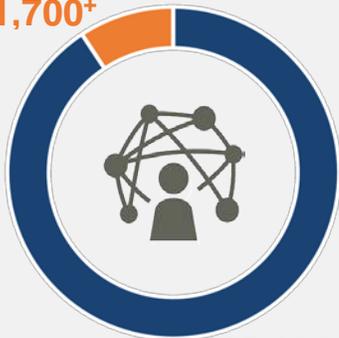
Newsletter, December 2016

Global Trade Analysis Project Overview (1992-2016)

GTAP NETWORK

New Members (2016)

1,700+



172

Countries
Represented

15,100+

Total Members

GTAP DATA BASE REGIONAL DISAGGREGATION



GTAP RESEARCH

"GTAP" Google Scholar Citations

21,400+



Impact Factors

476

Global Trade Analysis: Modeling & Applications

15.5

GTAP Technical Paper Series

14.3

GTAP Working Paper Series

4.9

GTAP Research Memoranda Series

GTAP CONSORTIUM

Members

28

Members-at-Large

3

14

Countries
Represented



GTAP EDUCATIONAL OUTREACH



Courses Offered

50

Graduates

1,100+

Countries Reached

82

Scholarships Awarded

\$211,000+

internally and externally funded

GTAP 9 Data Base

The centerpiece of the Global Trade Analysis Project is the GTAP Data Base, a fully documented, publicly available global data base which contains complete bilateral trade information, transport and protection linkages. The GTAP Data Base represents the world economy and is utilized by thousands worldwide as a key input into contemporary applied general equilibrium (AGE) analysis of global economic issues. The current release, the GTAP 9 Data Base, features 2004, 2007 and 2011 reference years as well as 140 regions for all 57 GTAP commodities.

What's New in GTAP 9?

- **GTAP 9a Data Base** – This release updated the following items.
 - *Domestic support data* - A processing error lead to significantly understating the 2011 domestic support in EU27 member countries.
 - *Capital stock data* - A very low capital stock level for Zimbabwe was reported. Capital stock data were originally retrieved from the Penn World Tables, and in release 9a, selected countries in all three reference years have been revised using their regional average.
- **GTAPAgg2** – Updated release of the original GTAPAgg program which allows users to import data for multiple versions into one shell aggregator instead of separate installations per version and reference year.
- Three reference years: 2004, 2007 and 2011
- Additional regional disaggregation: 140 regions and 57 sectors
 - New regions:* Benin, Burkina Faso, Guinea, Togo, Rwanda, Brunei Darussalam, Jordan, Dominican Republic, Jamaica, Puerto Rico, and Trinidad and Tobago
 - Updated regions:* Brazil, Colombia, Paraguay, Belarus, Pakistan, Turkey, China, Japan, Korea, Singapore, Taiwan, Australia, New Zealand, Norway, Malawi, Mozambique, Nigeria, Senegal, Tanzania, and Zambia
- New macro-economic data for 2004, 2007, and 2011
- New bilateral merchandise trade data for 2011
- New protection data for 2007 and 2011
- New Time-Series Bilateral Trade data from 1995-2013
- Improved bilateral services trade and energy data for 2004, 2007, and 2011
- Revised OECD domestic support for 2004, 2007, and 2011
- Decomposition of tariff (into ad valorem and specific)
- CO₂ emissions dataset integrated into core data base
- Five labor skill categories

www.gtap.agecon.purdue.edu/databases/v9/

GTAP 9 Satellite Data and Utilities

The GTAP 9 Satellite Data and Utilities are developed for use alongside the GTAP 9 Data Base allowing users to more easily adapt the full suite of GTAP Models for analysis of global trade and environmental issues.

Currently Available *(cost: free with purchase of GTAP 9)*

- **GTAP-Power** - electricity-detailed extension of the GTAP 9 Data Base
- **GDyn** - facilitates development of baseline projections consistent with GTAP 9 and for use with the GDyn Model
- **GMig₂** - contains global bilateral migration and remittances data consistent with the GTAP 9 Data Base
- **GTAP-E** - provides carbon dioxide emissions data distinguished by fuel and user for each GTAP 9 region
- **Non-CO₂ Emissions** - complements GTAP-E providing information on other greenhouse gas emissions

www.gtap.agecon.purdue.edu/databases/Utilities/

2016 GTAP Research Highlights

GTAP Working Paper Series

Extending the GTAP framework for public procurement analysis

by Aguiar, Angel, Caitlyn Carrico, Thomas Hertel, Zekarias Hussein, Robert McDougall and Badri Narayanan
GTAP Working Paper No. 82

Journal of Global Economic Analysis

The inaugural issue of the *Journal of Global Economic Analysis* (JGEA) was released in June 2016. JGEA is co-edited by Thomas Hertel, Center for Global Trade Analysis, Purdue University and Niven Winchester, MIT, and guided by an Editorial Advisory Board comprised of distinguished scholars and practitioners in AGE modeling and related disciplines,

The *Journal of Global Economic Analysis*:

- provides an open access, peer-reviewed platform for publication and dissemination of innovations in applied general equilibrium (AGE) modeling;
- publishes developments in theory, data, statistical analysis, methods, and teaching;
- enhances the credibility of AGE modeling by requiring replication of results during the peer-review process and, when possible, publication of new model code and data on the journal's website; and
- builds on and extends the high-impact, peer-reviewed GTAP Technical Paper Series.



Journal of Global Economic Analysis, Vol 1, No 1 (2016)

- *Advances in Methods and Theory*

Modern Trade Theory for CGE Modelling: The Armington, Krugman and Melitz Models

by Peter B. Dixon, Michael Jerie and Maureen T. Rimmer

GTAP-HET: Introducing Firm Heterogeneity into the GTAP Model

by Zeynep Akgul, Nelson B. Villoria, Thomas W. Hertel

- *Advances in Data and Parameters*

An Overview of the GTAP 9 Data Base

by Angel Aguiar, Badri Narayanan and Robert McDougall

The GTAP-Power Database: Disaggregating the Electricity Sector in the GTAP Database

by Jeffrey C. Peters

- *Advances in Software*

Using R to Extract Data from the World Bank's World Development Indicators

by Dominique van der Mensbrughe

www.jgea.org

2016 GTAP Research Highlights

Center for Global Trade Analysis Publications

- Aguiar, Angel; Narayanan, Badri; McDougall, Robert. "An Overview of the GTAP 9 Data Base". *Journal of Global Economic Analysis*, [S.l.], v. 1, n. 1, p. 181-208, June 2016. ISSN 2377-2999. doi:<http://dx.doi.org/10.21642/JGEA.010103AF>
- Britz, W., A. Drud and D. van der Mensbrugghe (2016) "Reducing unwanted consequences of aggregation in large-scale economic models—a systematic empirical evaluation with the GTAP model," Paper under review.
- Golub, A., T.W. Hertel, and S. Rose. "Global Land Use Impacts of US Ethanol: Revised Analysis Using Dynamic GTAP-BIO framework." Book chapter prepared for inclusion in *Handbook of Bioenergy Economics and Policy: Modeling Land use and Greenhouse Gas Emissions Implications*, edited by Madhu Khanna and David Zilberman (forthcoming).
- Hertel, T., W., U.L.C. Baldos and D. van der Mensbrugghe (2016) "Predicting Long Term Food Demand, Cropland Use and Prices", *Annual Review of Resource Economics* 8:417-441 doi:10.1146/annurev-resource-100815-095333.
- Kavallari, A., P. Conforti and D. van der Mensbrugghe (2016) "The Global Agriculture Perspectives System (GAPS): Version 1," Forthcoming, ESA Working Paper, Food and Agriculture Organization of the United Nations (FAO), Rome.
- Liu, J., T.W. Hertel, and F. Taheripour. (2016) "Analyzing Water Scarcity in Global CGE Models," *Water Economics and Policy* (forthcoming).
- Liu, J., T.W. Hertel, and F. Taheripour, "Analyzing future water scarcity in computable general equilibrium models," special issue on Economy-wide Models of Water Development, *Water Economics and Policy* (forthcoming).
- Peters, J.C. and T.W. Hertel. (2016) "The Database-Modeling Nexus in Integrated Assessment Modeling of Electric Power Generation," *Energy Economics* 56:107-116.
- Peters, J.C. and T.W. Hertel. (2016) "Matrix Balancing with Unknown Total Costs: Preserving Economic Relationships in the Electric Power Sector," *Economic Systems Research*
<http://www.tandfonline.com/doi/full/10.1080/09535314.2015.1124068>
- van der Mensbrugghe, D. (2016) "The Standard GTAP Model in GAMS, Version 6.2," Forthcoming, GTAP Working Paper.
- van der Mensbrugghe, D. (2016) "Using R to Extract Data from the World Bank's World Development Indicators," Forthcoming, *Journal for Global Economic Analysis*.
- van der Mensbrugghe, D., Chateau, J., R. Dellink and F. Chantret (2016) "ENV-Linkages Model," Mimeo.
- Baldos, U.L.C. and T.W. Hertel, (2016) "Debunking the 'New Normal': Why World Food Prices are Expected to Resume their Long run Downward Trend", *Global Food Security*, (8):27-38.
- Dhoubhadel S., Taheripour F., and Stockton M. (2016) "Livestock demand, global land use change, and induced greenhouse gas emissions," *Journal of Environmental Protection*, Vol 7, 985-995.
- Liu, Jing, Thomas Hertel, and Farzad Taheripour. "Analyzing Future Water Scarcity in Computable General Equilibrium Models." *Water Economics and Policy* (2016): 1650006.
- Xin Zhao, Guolin Yao, Wallace E. Tyner. "Quantifying breakeven price distributions in stochastic techno-economic analysis", *Applied Energy*, Volume 183, 1 December 2016, Pages 318-326, ISSN 0306-2619,
<http://dx.doi.org/10.1016/j.apenergy.2016.08.184>.
- Peters, J. C. and T. W. Hertel. (2016) "Achieving the Clean Power Plan 2030 CO2 Target with the New Normal in Natural Gas", *Energy Journal* 38 (5).

2016 GTAP Research Highlights

Publications (cont.)

Taheripour F., T. Hertel, B. Narayanan, S. Sahin, A. Markandya and B. Mitra. (2016) "Economic and land use impacts of improving water use efficiency in irrigation in South Asia." *Journal of Environmental Protection*, 7: 1571-1591.

Mahaffey H., Taheripour F., and Tyner W. (2016) "Evaluating the Economic and Environmental Impacts of a Global GMO Ban," *Journal of Environmental Protection*, 7:1522-1546.

Taheripour, F., Cui, H., & Tyner, W. E. (2016). An Exploration of Agricultural Land use Change at the Intensive and Extensive Margins: Implications for Biofuels Induced Land Use Change. In Z. Qin, U. Mishra & A. Hastings (Eds.), *Bioenergy and Land Use Change: American Geophysical Union* (Wiley).

Hertel, T.W. and U.L.C. Baldos. (2016) "Attaining Food and Environmental Security in an Era of Globalization", *Global Environmental Change*, 41:195-205.

Akgul, Z., N.B. Villoria and T.W. Hertel, (2016) "GTAP-HET: Introducing Firm Heterogeneity into the GTAP Model", *Journal of Global Economic Analysis*, (1):111-180.

Hertel, T., W., J. Liu (2016) "Implications of Water Scarcity for Economic Growth", *OECD Environment Working Paper No. 109*: www.oecd-ilibrary.org/environment/implications-of-water-scarcity-for-economic-growth_5jlssl611r32-en

Hertel, T., W. (2016) "Food Security Under Climate Change", *Nature Climate Change* (6):10-13.

Center for Global Trade Analysis Presentations

Hertel, T.W., based on work with U.L.C. Baldos, "Food and Environmental Security in an Era of Globalization", seminar presented at the IRI-THYS Center, Humboldt University, Berlin, March 17, 2016.

Hertel, T.W., "Climate Change, Agricultural Trade and Food Security", Presentation at the annual meetings of the American Association for the Advancement of Science, Washington, D.C., February 14, 2016.

van der Mensbrugghe, D. (2016) "Climate change and the Energy-Agriculture-Climate Change Nexus," Presented at a Workshop on Long-term scenario building for food and agriculture: A global overall model for FAO, Department of Agricultural Development Economics, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy, 19 February.

van der Mensbrugghe, D. (2016) "Shared Socio-Economic Pathways: Implications for Asia," Talk presented in the Asia Development Policy Lecture Series, Asian Development Bank (ADB), Manila, the Philippines, 21 March.

van der Mensbrugghe, D. (2016) "Top-down Approach to Global Integrated Assessment Modeling: A standard approach using GTAP-based global CGE Models," Presented at a Workshop on Energy and Climate Change Modeling sponsored by the Korean Environmental Institute (KEI), Seoul, Republic of Korea, 23-24 March.

Cai, Y., Golub, A., Hertel, T., & Judd, K. (2016). "Agricultural R&D policy under climate and economic uncertainty", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.

Haqiqi, Iman, Farzad Taheripour and Dominique van der Mensbrugghe, "Climate Change, Food Production, and Welfare", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.

Corong, Erwin and Angel Aguiar, "Regional and Global Impacts of Skill Mobility within the ASEAN Economic Community", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.

Hertel, Thomas, Uris Lantz Baldos and Dominique van der Mensbrugghe, "Predicting Long Term Food DC, USA, June 15-17, 2016.

2016 GTAP Research Highlights

Presentations (cont.)

- McDougall, Robert, Joseph Francois and Angel Aguiar, "Services trade data in the Global trade analysis project", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Liu, Jing, Thomas Hertel, Richard Lammers, Alexander Prusevich, Uris Lantz Baldos, Danielle Grogan and Steve Frolking, "Achieving Sustainable Irrigation Water Withdrawals: Global Impacts on Food Production and Land Use", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Aguiar, Angel, Caitlyn Carrico and S. Amer Ahmed, "Migration Response to Oil Price Volatility: A Dynamic Simulation of Migration from South and Southeast Asia to the GCC", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- van der Mensbrugge, Dominique and Jeffrey C. Peters, "Volume preserving CES and CET formulations", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Baldos, Uris Lantz, "Global food and environmental impacts under climate change: An application of gridded agricultural economic modelling", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Akgul, Zeynep, Thomas Hertel and Nelson Villoria, "Heterogeneous Firms, Non-tariff Measures, and US Beef Trade", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Carrico, Caitlyn, "Improving Global Value Chain Analysis: Introducing Tariff Revenues into a GTAP-Based MRIO Framework", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Haqiqi, Iman, "Decomposing Land Use Changes in GTAP-BIO-W Model", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Baniya, Suprabha, Zeynep Akgul and Thomas Hertel, "Effects of Transportation Infrastructure Reforms on the Export Participation and Composition", 19th Annual Conference on Global Economic Analysis, Washington DC, USA, June 15-17, 2016.
- Pena-Levano, Luis, Farzad Taheripour and Wallace Tyner, "Climate Change Interactions with Agriculture, Forestry Sequestration and Food Security", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Tyner, Wallace and Kemal Sarica, "Alternative Policy Impacts on U.S. GHG Emissions and Energy Security: A Hybrid Modeling Approach", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Zhao, Xin, Goulin Yao and Wallace Tyner, "Quantifying Breakeven price Distributions in Stochastic Techno-Economic Analysis: A Case of Cellulosic Biofuel Production from Fast Pyrolysis and Hydroprocessing Pathway", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Haqiqi, Iman, "Water Scarcity, Food Production and Welfare: an Application of ENVISAGE Model", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Golub, Alla, and Badri Gopalakrishnan, "Global Economic Impacts of Russian Restriction on Food Imports", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Liu, Jing, Thomas Hertel, Uris Baldos, Richard Lammers, and Alexander Prusevich, "Adaptations to Achieve Future Sustainable Irrigation", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Zhao, Xin and Wallace Tyner, "Global Land Use Changes due to the U.S. Cellulosic Biofuel Program", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Golub, Alla, YongYang Cai, Thomas Hertel, and Kenneth Judd, "Agricultural R&D Policy Under Climate and Economic Uncertainty", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.

2016 GTAP Research Highlights

Presentations (cont.)

- Hertel, Thomas, Uris Baldos, and Dominique van der Mensbrugghe, "Predicting Long Term Food Demand, Cropland Use and Prices", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Mahaffey, Harrison, Farzad Taheripour, and Wallace Tyner, "Economic and Environmental Impacts of a Global GMO Ban", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Taheripour, Farzad, Thomas Hertel, and Sebnem Sahin, "Economic and Land Use Impacts of Improving Water Use Efficiency in South Asia", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Haqiqi, Iman and Thomas Hertel, "Decomposing Irrigation Water Use Changes in Equilibrium Models", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Marques Alcala, German, Thomas Hertel, and Roman Keeney, "Examining the Labor Market Consequences of Endogenous Low-skill Migration with a Market-based Immigration Policy: A General Equilibrium analysis", AAEA 2016, Boston, MA, USA, July 31-August 2, 2016.
- Hertel, T.W., based on work with U.L.C. Baldos, Jing Liu, Navin Ramankutty and Yoshi Wada, "Estimating the Real Cost of Food", organized session contribution, Global Land Project meetings, Beijing, China, October 25, 2016.
- Hertel, T.W., based on work with Guolin Yao and Farzad Taheripour, "Economic Insights into Telecoupling", symposium presentation, Global Land Project meetings, Beijing, China, October 25, 2016.
- Hertel, T.W., based on work with U.L.C. Baldos, "Food and Environmental Security in an Era of Globalization", seminar presented at Renmin University, Beijing, China, October 24, 2016.
- Farzad Taheripour, "Induced Land Use Change at the Extensive and Intensive Margins," Presented at: The Bio-Economy: Technology and Policy Path Forward, Rutgers University, New Brunswick, NJ, September 2016.
- Jing Liu, Thomas Hertel, Richard Lammers, Alexander Prusevich, Uris Baldos, Danielle Grogan, and Steve Frolking, "Achieving Sustainable Irrigation Water Withdrawals: Global Impacts on Land Use", USITC, Washington DC, October 27, 2016
- Jing Liu, Thomas Hertel, Richard Lammers, Alexander Prusevich, Uris Baldos, Danielle Grogan, and Steve Frolking, "Achieving Sustainable Irrigation Water Withdrawals: Global Impacts on Land Use", IFPRI, Washington DC, October 27, 2016
- Hertel, T.W., based on work with U.L.C. Baldos, Jing Liu, Navin Ramankutty and Yoshi Wada, "Estimating the Real Cost of Food", organized session contribution, Global Land Project meetings, Beijing, China, October 25, 2016.
- Hertel, T.W., based on work with Guolin Yao and Farzad Taheripour, "Economic Insights into Telecoupling", symposium presentation, Global Land Project meetings, Beijing, China, October 25, 2016.
- Hertel, T.W., based on work with U.L.C. Baldos, "Food and Environmental Security in an Era of Globalization", seminar presented at Renmin University, Beijing, China, October 24, 2016.
- Cui, Hao. "Climate change impacts under alternative trade policy scenarios." Presentation at *Singapore-China Energy Forum 2016*, Energy Studies Institute, National University of Singapore, Singapore, Nov 10, 2016.
- Hertel, T.W., based on work with Uris L.C. Baldos, "Global Change and the Challenges of Sustainably Feeding a Growing Planet", National Conference on Food and Agri-business, Indianapolis, November 16, 2016.
- Hertel, T.W., based on work with Jing Liu, U.L.C. Baldos and others, "Water Scarcity and Climate Change", OCP side meeting on Water and Climate Change, COP-22 meetings, Marrakech, Morocco, November 10, 2016.

2016 GTAP Research Highlights

Presentations (cont.)

Hertel, T.W., based on work with Jing Liu, U.L.C. Baldos and others, “Sustainable Irrigation in the Global Food System”, plenary paper, UCL Conference on Water Sustainability, University College London, November 8, 2016.

2017 GTAP Events

2017-1 GTAP 101 Course

“Introduction to Computable General Equilibrium Modeling”

April 10 – May 28, 2017 | Online Course

**Applications due January 15*

2017 GTAP Advisory Board Meeting

June 5-6, 2017 | West Lafayette, IN, USA

20th Annual Conference on Global Economic Analysis

“Global Economic Analysis in the 21st Century: Challenges and Opportunities”

June 7-9, 2017 | West Lafayette, IN, USA

**Abstracts and organized session proposals due January 15*

25th Annual Short Course in Global Trade Analysis

“Introduction to Applied General Equilibrium Analysis in a Multi-Region Framework”

July 15-20, 2017 | Cartagena, Colombia

**Applications due February 12*

2017-2 GTAP 101 Course

“Introduction to Computable General Equilibrium Modeling”

September 18 – November 5, 2017 | Online Course

**Accepting applications April 10 – July 2*

2017 Short Course in Dynamic Global Trade Analysis

“Dynamic Modeling and Applications in Global Economic Analysis”

October 6-11, 2017 | West Lafayette, IN, USA

**Applications due April 9*

2017 GTAP PTA Course

“Applied Policy Analysis: Mini-course on Preferential Trade Agreements”

October 23 – November 26, 2017 | Online Course

**Accepting applications February 1 – August 13*

www.gtap.agecon.purdue.edu/events/



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