

Greetings from GTAP-Central!

There is only one word for 2020: 'WOW'. Though the possibility of a global pandemic had been on some of our radar screens, no one could predict the timing, the breadth, nor the severity. As we approach the end of the year, we are seeing positive signs that the end is near, even as the pandemic is spiking in many countries. There are other positive signals from a global perspective: (1) multiple announcements of goals to achieve zero net carbon emissions by 2050 or 2060, covering a large share of global greenhouse gas emissions; (2) coupled with rapid progress on the penetration of new 'clean' technologies; and (3) significant new multilateral trade agreements. These positive signals do not belie the challenges facing global policy-making. The Covid pandemic has raised questions about the risks associated with global value chains and what these imply for future economic prospects.

As with institutions around the world, the pandemic severely affected operations at the Center—remote working, online workshops and meetings, a ban on travel, and transforming the annual conference to a virtual one. The disruptions inevitably affected our work, including setting aside long-planned studies in order to focus on the economics of the pandemic. Despite the disruptions, the Center recorded a number of achievements over the past year:

- Release of the GTAP 10 Data Base satellite accounts—MRIO, GTAP-Power, non-CO2 emissions and air pollutants, GDyn and GMIG extensions, GTAP-APT, and the GTAP-AEZ land-use database. There is also a new release of TASTE consistent with GTAP 10. We are anticipating an interim and limited release, 10.1, that will incorporate a number of countries updates including new ones expanding our geographic representation.
- The first pre-release of Version 11 for the GTAP Advisory Board members, with a new 2017 reference year. The second pre-release is scheduled for the first half of 2021.
- We are working on improving certain modules of the GTAP Data Base: (1) complementing the remittances (GMIG) and profit flows (GDyn) with flows of official development assistance (ODA) to improve the balance of payments module; (2) incorporating the Trade in Services data by Mode of Supply (TiSMoS) hosted at the WTO to improve the bilateral flows of services by mode of supply; (3) incorporating more of the FAO data in order to improve the agricultural part of the GTAP Data Base build; (4) incorporating nutritional accounts to the GTAP Data Base; (5) mainstreaming the land use and cover data into the GTAP build procedure; and (6) incorporating biofuels data—pioneered by Farzad Taheripour and colleagues—as a new extension.
- The first phase of the 'baseline' project came to fruition with three significant outputs: (1) a series of six articles in a special issue of the *Journal of Global Economic Analysis*—plus an overview article; (2) consolidation of the GTAP-RD model with additional features including a version that incorporates GTAP-E and Power; and (3) a historical validation exercise by Peter Dixon and Maureen Rimmer, which compares the results of a dynamic version of the GTAP model calibrated to the GTAP 2004 database to the 2014 database. We anticipate that this last study will be a core component of a second phase of the 'baseline' project aimed at improving the projection capabilities of the GTAP Model and its offshoots.
- The ninth and tenth issues of the *Journal of Global Economic Analysis* (JGEA) were published in June and December respectively. The former devoted to the aforementioned special issue

on baselines and the latter covering topics such as ‘love of variety’, modeling land use, the most recent GTAP-Power database and using an emulator to model crop yields. More details, as well as the papers and accompanying supplementary materials permitting replication of each of these studies are available at <http://www.jgea.org>. Now five years old and maturing, the Journal is excited to announce an extension of its editors to include four new associate editors: Eddy Bekkers (WTO), Roberto Roson (Ca’ Foscari University and Loyola Andalusia University), Anna Strutt (University of Waikato) and Da Zhang (Tsinghua University).

- Launching of the GTAP Virtual Seminar Series, re-launching our seminar series to showcase papers published in the JGEA to a broader audience.

Though some of our research efforts were squeezed by the pandemic, the Center’s research program was nonetheless very active. Tom and colleagues progressed with their NSF grant focused on innovations at the nexus of food, energy and water systems (INFEWS), one of the aims of which is to integrate four disparate models of water, soils and economics. This effort will be complemented by a new project, designated as ‘GLASSNET’, that is meant to improve communications across a broad number of networks, i.e. a network of networks, again with a focus on multi-disciplinarity. In addition, the ‘trade’ elasticity project that was initiated last year is beginning to bear fruit including additional modifications to the GTAP-HS model that includes production transformation elasticities (differentiating domestic output across destination markets) using either CET or CRETH specifications and tariff-rate quotas (TRQs). The Center was also involved with an Energy Modeling Forum exercise (EMF-36). EMF-36 focused on the Paris Agreement as well as more ambitious targets to be within reach of the 2°C target. Center staff used the Envisage integrated assessment model (IAM) coupled to the World Bank’s Global Income Distribution Dynamics (GIDD) model to assess the impacts of these various mitigation policies on global poverty outcomes and income distribution. In a similar vein, the Center also provided analytical support for an IMF study on the [EU Green Deal](#), again using the Envisage Model.

Due to the pandemic, the standard GTAP Short Course was canceled and the anticipated dynamic short course was postponed. We had considered making both fully online, though in the end felt that the value of the personal interactions could not be replicated online. The strictly online GTAP courses; however, continue to do well. Enrollment in GTAP 101 has been robust. At the turn of the year, please be on the lookout for the 3rd edition of Mary Burfisher’s book, *Introduction to Computable General Equilibrium Models*, which uses the latest version of the GTAP Model specification and includes a number of new advanced topics. Two other online courses were offered in 2020: GTAP-PTA (preferential trade agreements) and the second offering of GTAP-HET (the heterogeneous firm version of GTAP). Both were very well attended. We continue to think about other potential online offerings such as GTAP-HS (linked partial and general equilibrium modeling) and GTAP-E (energy, power and emissions). Feedback would be welcome. The 2021 Short Course will be held at Purdue from 26-30 July (with the online course starting 10 May). Applications are being accepted through 28 February 2021. The first session of GTAP 101 will be offered from 15 March – 2 May 2021, with applications open through 10 January 2021. GTAP PTA will be offered from 10 May – 18 June, the application deadline is 28 February. Potential students should monitor the GTAP website, [GTAP-L Mailing List](#), and [GTAP social media](#) for additional information.

In March we made the fateful decision to convert the 23rd Annual Conference on Global Economic Analysis to an online only version—very much to our chagrin as we had been looking forward to holding the meeting in Tokyo and cheering our host, Ken Kawasaki from GRIPS. Despite the necessary

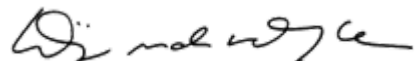
setback, we all owe a huge debt of gratitude to Ginger Batta who, in a matter of weeks, was able to completely re-organize the Conference, preparing the computer logistics and squeezing the sessions into three shorter days to deal with the 24 global time zones. The upside of the decision to move online was a huge increase in the number of registrations, over 1000, including many from developing countries. After an early and brief hiccup as we tested the limits of Webex, the conference went smoothly and the participant feedback was very positive. But the feedback also strongly supported reverting back to an onsite conference as soon as possible, as most participants missed the face-to-face meetings, the discussions at coffee breaks and social events and the camaraderie that is a tradition at the annual conference. The traditional annual awards were given, though without the usual pomp. The Center was very pleased to award the 2020 Alan A. Powell Award to Bill Powers from the U.S. International Trade Commission (USITC). The USITC has been a critical Board Member for many years and has been a prime mover in shaping the Center's activities on database and model improvements. Since his appointment as Chief Economist of the USITC, Bill has taken a keen interest in the Center's work and has successfully leveraged the GTAP Network to improve analytical work on trade. Also, three highly valued members of the GTAP Network were selected to be Research Fellows for 2020-2023: Jonas Luckmann (Humboldt Universität zu Berlin), Simon Mevel (United Nations Economic Commission for Africa) and Roberto Roson (Ca' Foscari University and Loyola Andalusia University). One of the network's most distinguished awards is the GTAP 'Hall of Fame' award for lifetime achievements to the development of GTAP. This is not an annual award, but it was easy to discern that the award this year should go to Kenichi Kawasaki (GRIPS). Ken has been a strong promoter of GTAP in Japan and more broadly throughout East Asia and has attended every GTAP Conference. His current work, critical for trade policy analysis, is to spearhead improvements in the modeling of non-tariff trade measures. It was disappointing that we could not celebrate this achievement in person with the full backing of the conference participants, but we all owe much to Ken for his dedication to the network.

Looking to next year, we are monitoring carefully the evolution of the pandemic and the roll-out of the vaccines and hope to hold the 2021 Annual Conference as anticipated in Fort Collins, CO from 23-25 June 2021. The local co-host this year is Colorado State University, with a debt owed to Amanda Countryman for unstinting help with the logistics and preparation. Fort Collins is easily reached from Denver International Airport and is a fantastic gateway to the Rocky Mountains. Please remember to submit your abstracts and organized session proposals by 15 January! You can already mark your calendar for the 2022 conference to be held in Kigali, co-hosted with the UNECA, 8-10 June 2022.

The GTAP Network continues to grow, with over 22,000 members in 179 countries. We encourage you to follow GTAP on [social media](#) and to visit the [GTAP website](#), which contains news about the network, upcoming events and courses, and an ever-increasing number of papers and references of critical importance to our research and work. We also encourage you to update your profile and submit your own papers, programs and tips for exploiting the database and enhancing our models.

While 2021 is likely to be a busy year for all of us in the GTAP community, we do hope it will be less disruptive than 2020. We look forward to working with all of you as our collective work remains ever relevant to policy-makers around the world. Best wishes for a healthy, happy and productive 2021 from the Center for Global Trade Analysis at Purdue University.

Warm regards,



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GTAP DATA BASE / MODEL DEVELOPMENTS

GTAP 10 Data Base

The centerpiece of the Global Trade Analysis Project is the GTAP Data Base, a fully documented, publicly available global database containing 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 most applied general equilibrium (AGE) analysis of global economic issues. GTAP 10 provides 4 reference years (2004, 2007, 2011, 2014) for 121 countries and 20 aggregate regions, where each economy is represented by 65 products and services.

GTAP 10 Satellite Data and Utilities

The GTAP Satellite Data and Utilities listed below allow users to more easily use and adapt the full suite of GTAP Models for analysis of global trade and environmental issues. Purchasers of the GTAP 10 Data Base automatically get free access to these data sets.

Available Now

- **Air pollution dataset** - Emissions for black carbon, carbon monoxide, ammonia, non-methane volatile organic compounds, nitrogen oxides, organic carbon, particulate matter 10, particulate matter 2.5, and sulfur dioxide
- **Bilateral Time Series Trade Data** - 1995-2016 time-series merchandise trade data
- **GTAP-MRIO** - Extends the standard GTAP Data Base by additionally distinguishing bilateral trade and tariff flows by agents or so-called end-users, namely: firms, private household, government and investors
- **GTAP-E Data Base** - Provides carbon dioxide emissions data distinguished by fuel and by user for each of the 141 countries/regions in the GTAP 10 Data Base
- **GTAP-Power Data Base** - Electricity-detailed extension of the GTAP Data Base where the 'ely' sector is disaggregated into transmission & distribution, nuclear, coal, gas (base and peak load), oil (base and peak load), hydroelectric (base and peak load), wind, solar, and other power technologies
- **GDyn Data Base** - Augments the GTAP Data Base with foreign income receipts and payments
- **GMig2 Data Base** - Extends the GTAP Data Base with international bilateral migration and remittances
- **Non-CO2 Data Base** - Emissions are reported for three types of non-CO₂ GHGs – CH₄ (methane), N₂O (nitrous oxide) and the group of fluorinated gases (F-gases), and cover four reference years of GTAP 10a
- **GTAP-APT** - GTAP-APT considers Food and Agricultural Organization (FAO) data to target agricultural production in 100+ countries in GTAP

Coming in 2021

- Domestic margins
- Energy subsidies
- Nutritional Data Base
- GTAP-HS with V_F with aggregation
- CO₂ emissions from non-fossil fuel combustion activities

Other Notable Resources

- **TASTE for GTAP 10** - The **T**ariff **A**nalytical and **S**imulation **T**ool for Economists includes applied and bound tariff rates as well as the corresponding trade flows for the year 2014. The data is based on, and broadly consistent with, the ITC MacMAP tariff dataset employed in GTAP 10

GTAP RESEARCH HIGHLIGHTS



Vol 5, No 1 (2020) - Baselines for Dynamic Computable General Equilibrium Models

- ***Perspectives on Global Economic Analysis***
 - **Shaping Baseline Scenarios of Economic Activity with CGE Models: Introduction to the Special Issue**
Rob Dellink, Dominique van der Mensbrugghe, Bert Saveyn
- ***Advances in Methods and Theory***
 - **Macroeconomic Drivers of Baseline Scenarios in Dynamic CGE models: Review and Guidelines Proposal**
Jean Fouré, Angel Aguiar, Ruben Bibas, Jean Chateau, Shinichiro Fujimori, Julien Lefevre, Marian Leimbach, Luis Rey-Los-Santos, Hugo Valin
 - **Modelling Consumption and Constructing Long-Term Baselines in Final Demand**
Mun Ho, Wolfgang Britz, Ruth Delzeit, Florian Leblanc, Roberto Roson, Franziska Schuenemann, Matthias Weitzel
 - **Characterizing Supply-Side Drivers of Structural Change in the Construction of Economic Baseline Projections**
Jean Chateau, Erwin Corong, Elisa Lanzi, Caitlyn Carrico, Jean Fouré, David Laborde

- **Linking Global CGE Models with Sectoral Models to Generate Baseline Scenarios: Approaches, Challenges, and Opportunities**
Ruth Delzeit, Robert Beach, Ruben Bibas, Wolfgang Britz, Jean Chateau, Florian Freund, Julien Lefevre, Franziska Schuenemann, Timothy Sulser, Hugo Valin, Bas van Ruijven, Matthias Weitzel, Dirk Willenbockel, Krzysztof Wojtowicz
- **Capturing Key Energy and Emission Trends in CGE models: Assessment of Status and Remaining Challenges**
Taran Faehn, Gabriel Bachner, Robert Beach, Jean Chateau, Shinichiro Fujimori, Madanmohan Ghosh, Meriem Hamdi-Cherif, Elisa Lanzi, Sergey Paltsev, Toon Vandyck, Bruno Cunha, Rafael Garaffa, Karl Steininger
- **Modelling Trade and Other Economic Interactions Between Countries in Baseline Projections**
Eddy Bekkers, Alessandro Antimiani, Caitlyn Carrico, Dorothee Flaig, Lionel Fontagné, Jean Fouré, Joseph Francois, Ken Itakura, Zornitsa Kutlina-Dimitrova, William Powers, Bert Saveyn, Robert Teh, Frank van Tongeren, Marinos Tsigas

Vol 5, No 2 (2020)

- ***Advances in Methods and Theory***
 - **Love of Variety in Trade Models with Product Differentiation**
Kazuhiko Oyamada
- ***Advances in Pedagogy***
 - **Land Use in Computable General Equilibrium Models**
Farzad Taheripour, Xin Zhao, Mark Horridge, Farid Farrokhi, Wallace Tyner
- ***Advances in Data and Parameters***
 - **GTAP-Power Data Base: Version 10**
Maksym Chepeliev
- ***Updates***
 - **Aggregation of Gridded Emulated Projections at the National or Regional Level: Rainfed and Irrigated Crop Yields and Irrigation Water Requirements**
Elodie Blanc

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2020 Additions to GTAP Paper Series

GTAP Working Papers

- **Climate Impacts on Agriculture: Searching for Keys under the Streetlight**
by Hertel, Thomas and Cicero Zanetti De Lima
GTAP Working Paper No. 86

- **Volume Preserving CES and CET Formulations**
by van der Mensbrugghe, Dominique and Jeffrey C. Peters
GTAP Working Paper No. 87

GTAP Research Memorandum

- **GTAP-Power 10 Data Base: A Technical Note**
by Chepeliev, Maksym
GTAP Research Memorandum No. 31
- **Development of the Non-CO2 GHG Emissions Database for the GTAP 10A Data Base**
by Chepeliev, Maksym
GTAP Research Memorandum No. 32
- **Development of the Air Pollution Database for the GTAP 10A Data Base**
by Maksym Chepeliev
GTAP Research Memorandum No. 33
- **The GTAP 10A Multi-Region Input Output (MRIO) Data Base**
by Carrico, Caitlyn, Erwin Corong and Dominique van der Mensbrugghe
GTAP Research Memorandum No. 34
- **The GTAP 10A Data Base with Agricultural Production Targeting Based on the Food and Agricultural Organization (FAO) Data**
by Chepeliev, Maksym
GTAP Research Memorandum No. 35
- **Development of GTAP 10 Land Use and Land Cover Data Base for years 2004, 2007, 2011 and 2014**
by Baldos, Uris Lantz and Erwin Corong
GTAP Research Memorandum No. 36

2021 GTAP EVENTS

GTAP 101 Course

"Introduction to Computable General Equilibrium Modeling in the GTAP Framework"

March 15 - May 2, Online Course

Apply by January 10!

GTAP Preferential Trade Agreements Course

"Applied Policy Analysis: Course on Preferential Trade Agreements"

May 10 - June 18, Online Course

Apply by February 28!

***GTAP Advisory Board Meeting**

June 21-22, Fort Collins, Colorado, USA

***GTAP Conference**

"Global Food System: Opportunities and Challenges"

June 23-25, Fort Collins, Colorado, USA

Submit abstracts, organized session proposals, travel funding and scholars program applications by January 15!

***GTAP Short Course**

"Theory and Applications of Computable General Equilibrium Analysis with the GTAP Model"

Online Course: May 10 – July 11 | Onsite Course: July 26-30

West Lafayette, Indiana, USA

Apply by February 28!

***GTAP Dynamic Short Course**

"Applied General Equilibrium Analysis using a Dynamic Multi-Region Model"

Online Course: August 23 – October 3 | Onsite Course: October 11-15

West Lafayette, Indiana, USA

Apply by May 16!

GTAP 101 Course

"Introduction to Computable General Equilibrium Modeling in the GTAP Framework"

September 6 – October 24, Online Course

Apply by June 27!

GTAP Firm Heterogeneity Course

"Applied Policy Analysis with Advanced Trade Theories"

October 4 - November 21, Online Course

Apply by July 18!

GTAP Virtual Seminar Series

Be on the lookout for our quarterly virtual seminar series!

GTAP Virtual Seminar Series, Vol 2, No 1 (2021)

Incorporating Frictional Unemployment into the GTAP Model

January 27, Virtual Seminar

Register by January 24!

**In-person events are currently being planned, with virtual offerings as backup. Be sure to check the specific event webpage for further details.*