

GTAP Board Report 2017

European Commission

The European Commission and its different services are active users of the GTAP database and other products provided by the GTAP Centre. This report highlights GTAP-related activities for the period 2016-2017 and priority areas for future developments in respect to the GTAP model and database.

GTAP-related activities

The Joint Research Centre (DG JRC) uses the GTAP database to run global CGE models like MAGNET, GLOBE and GEM-E3, for the calibration of the regional CGE model RHOMOLO and as a source of data for multiplier analysis, in particular to analyse issues related to the bio-economy through backward, forward and employment multipliers. A newly developed Dynamic CGE model with ICT and R&D driven endogenous growth uses the GTAP database as well. These models are used for policy support to DG CLIMA, DG AGRI, DG ENV, DG ENER, DG DEVCO, DG REGIO, etc.

DG TRADE uses the GTAP database and standard and dynamic versions of the GTAP model as tools for analysis of all EU major trade policy initiatives (e.g., TTIP, EU-Canada FTA, EU-Vietnam etc). DG TRADE has also initiated and supported the GTAP Public Procurement data base extension and modelling modification project. The project has been successfully completed and paves the way for policy assessments in an area of growing importance.

As a joint project DG TRADE, DG JRC and ESTAT (as advisory partner) provided the updated EU28 IO tables to the GTAP centre which were included in the new release of the GTAP database in January 2017. The EU-GTAP project has also provided fully-fledged matrices of Taxes less Subsidies on Products that may be split into: VAT; Other taxes on products (excises), excluding import tariffs; Import tariffs, depending on data availability; Subsidies on agricultural products and Other subsidies on products. It is envisaged that these will become available to the GTAP users in the forthcoming year.

DG ENER, DG MOVE and DG CLIMA regularly develop projections of energy and transport trends and greenhouse gas emissions to 2050. These so-called "Reference scenarios", are shared with EU Member States and serve as benchmark for evaluating alternative policy options in Impact Assessments. This process involves consultants' work using the GEM-E3 model inter alia for developing sectoral value added projections for EU Member States. The GEM-E3 model draws on the GTAP database.

Priority areas

Different services of the European Commission that are actively using the GTAP database as an input in their daily activities highlighted different areas of priority for future improvements.

1. Splitting the services sectors by modes of supply

With the growing importance of services in the global economy, the current sectoral coverage of services in the GTAP database is often seen as too limited by policy makers. The limited sectoral disaggregation of services and the representation of several key policy parameters in the area of services is lacking in the current analytical framework, notably the services modes of supply - a key feature for all trade negotiations in the area of services, as part of bilateral, plurilateral or multilateral trade negotiations. The GTAP Centre, in charge of developing the CGE tools used by the European Commission and other Board members with trade-related activities, is well placed to make progress on this important policy area. DG TRADE, in cooperation with the WTO, has prepared an initiative that has as its ultimate goal a database and modelling extension which will enable an assessment of the impact of trade policy initiatives on services trade by modes of supply. This collaborative project (to which other partners are invited to contribute) will build on ongoing developments in the area of input-output analyses, and recent progress made in service data collection by statistical agencies (notably Eurostat) and the analytical effort of CGE modelling community.

2. Other improvements in the GTAP database and CGE modelling parameters

The GTAP database and the accompanying CGE modelling framework has been constantly improved and extended to cover a broad range of policy issues. Several additional improvements were deemed important by the GTAP users at the European Commission:

- The GTAP database should be provided in an official GTAP-MRIO format. Furthermore, the choice for base years in future updates of the GTAP database should be as closely as possible to the official release of IO data by statistical agencies. For many countries, such data is released periodically on a 5-year cycle (e.g. 2010, 2015). The JRC-GTAP joint effort in updating the IO tables of EU Member States in the GTAP database is a good opportunity to ensure a better alignment of official statistics and the GTAP database. More insights and additional documentation as to why the GTAP database may deviate from the values published in the National Accounts would be valuable for users.
- The GTAP classification should be updated to ISIC Rev.4 (NACE rev.2), accompanied by the elaboration of a common bridge correspondence between the old and the new GTAP classifications.
- We would support more ex-post historical validation exercises of CGE models using the GTAP database. It is often the case that key parameters (e.g. energy demand and supply elasticities) of these models are not econometrically estimated, and the performance of the model is not contrasted against historical outcomes. A revision and possibly new estimation of Armington elasticities at bilateral level to make them more up to date with current economic reality would be very relevant. Similarly, the dynamic capital adjustment parameters need to be re-estimated and empirically validated.
- The need to include non-tariff barriers trade cost equivalents in the GTAP database, for goods and services. Being able to assess the impact of NTBs is of crucial importance for trade

policy analysis. Similarly, more information on the representation of tariffs by type (specific, mixed, compound, tariff rate quotas with fill rates and rents) would be very useful.

- The higher level of technological detail in the power sector (e.g. coal-fired, gas-fired, wind, solar, hydro, nuclear, etc.) is already widely used for energy and climate questions on an international and national level and should become a permanent feature of any GTAP release (incl. updates).

3. Other issues

Several Commission services would be interested in the following issues:

- A better representation of the institutional accounts and their transfers within the GTAP database (particular attention to government and taxation);
- An improvement of the data for African countries by using recent I/O tables and other recent available data sources such as farm and household surveys etc. as well as improvement of intra-African trade and tariff data;
- Additional sectoral disaggregation (e.g. energy-intensive sectors, further disaggregation of the transport equipment sector) as well as a split of the fish sector from the other food sector and improvement of the domestic support data.
- Quality checks in respect to the tariff and TRQ data which will improve the user friendliness of the GTAP database.

Selected publications

Scientific Articles

Boulanger P, Dudu H, Ferrari E, Philippidis G (2016). Russian Roulette at the Trade Table: A Specific Factors CGE Analysis of an Agri-food Import Ban. *Journal of Agricultural Economics* 67(2): 272-291.

Britz W, Pérez-Dominguez I, Badri NG (2015). Analyzing Results from Agricultural Large-scale Economic Simulation Models: Recent Progress and the Way Ahead. *German Journal of Agricultural Economics* 64 (2): 107-119.

Delincé J, Ciaian P, Witzke H-P (2015). Economic impacts of climate change on agriculture: the AgMIP approach. *Journal of Applied Remote Sensing* 9(1).

Kutlina-Dimitrova, Z. and Lakatos, C. (2014). Assessing the economic impacts of the EU-Singapore FTA with a dynamic general equilibrium model. *International Economics and Economic Policy* 11(3), pp 277-291.

Osman R, Ferrari E, McDonald S (2015). Constructing a SAM for Egypt (2008/09) Introducing Water and Irrigation Seasonality. *Journal of Development and Economic Policies* 17 (1): 5-29.

Philippidis G., M'barek R., Ferrari E., (2016), "Is 'bio-based' activity a panacea for sustainable competitive growth?". *Energies* 9(10).

Saveyn B., Paroussos L., Szewczyk W., Vandyck T., Ciscar J.C., Karkatsoulis P., Fragkiadakis K., Fragkos P., Vrontisi V., Capros P. and Van Regemorter D. (2016). Economic Assessment of Climate, Energy and Air Quality Policies in the EU with the GEM-E3 Model: An Overview. In Dinar A. (Ed.), *WSPC Reference on Natural Resources and Environmental Policy in the Era of Global Change: Computable General Equilibrium Models* (Vol. 3). pp 207-246. Singapore: World Scientific Publishing Company.

Vandyck, T., Keramidas, K., Saveyn, B. and Kitous, A. (2016). A global stocktake of the Paris pledges: Implications for energy systems and economy. *Global Environmental Change*, Vol. 41, 46-63.

Vrontisi Zoi, Jan Abrell, Frederik Neuwahl, Bert Saveyn, and Fabian Wagner (2016). Economic impacts of EU clean air policies assessed in a CGE framework. *Environmental Science & Policy*, Volume 55, Part 1, January 2016, Pages 54–64.

JRC Reports (Publications Office of the European Union)

Boulanger, P., H. Dudu, E. Ferrari, M. Himics, R. M'barek, 2016. "Cumulative economic impact of future trade agreements on EU agriculture" JRC Working Papers JRC103602, Joint Research Centre (Seville site).

European Commission (2016) "[Effort Sharing Proposal](#)" Impact Assessment (SWD(2016)247).

Kitous A., Saveyn B., Keramidas K., Vandyck T., Rey Los Santos L., Wojtowicz K. (2016). Impact of low oil prices on oil exporting countries. JRC-IPTS Working Papers, Institute for Prospective and Technological Studies, Joint Research Centre.

Kitous, A., Keramidas, K., Vandyck, T., and Saveyn, B (2016). "Global Energy and Climate Outlook: Road from Paris" JRC Science for Policy Report, DG Joint Research Centre.

M'Barek R, Delincé J (editors) (2015). iMAP, an integrated Modelling Platform for Agro-economic Commodity and Policy Analysis – New developments and policy support 2012-14. JRC Technical Report, EUR 27197.

Philippidis G, M'Barek R, Ferrari E (2016). Drivers of the European Bioeconomy in Transition (BioEconomy2030) – an exploratory, model-based assessment, JRC Science for Policy Report, EUR 27563.

Philippidis, G., M'barek, R., Ferrari, E.; Drivers of the European Bioeconomy in Transition (BioEconomy2030) - an exploratory, model-based assessment; EUR 27563 EN; doi:10.2791/529794.

Sanjuán López A, Resano Ezcaray H (2015). Gravity estimations to correct the 'small shares stay small' bias in economic models. The example of Mercosur and EU agri-food trade. JRC Science and Policy Report, EUR 27264.

Conference Presentations

Boulanger P, Dudu H, Ferrari E, Philippidis G. The cost of import prohibition for political reason: CGE analysis of the Russian ban on agri-food products. At 18th Annual Conference on Global Economic Analysis, June 17-19, 2015, Melbourne, Australia.

Boulanger P, Kavallari A, M'barek R, Rau ML, Rutten M. Options to improve food security in North Africa: CGE modelling of deeper trade and investment integration with the European Union. At 29th International Association of Agricultural Economists Conference, August 9-14, 2015, Milan, Italy.

Boulanger P, Philippidis G, Jensen HG. EU agricultural domestic support in GTAP: a proposal for an alternative approach. At 18th Annual Conference on Global Economic Analysis, June 17-19, 2015, Melbourne, Australia. Revisited framework of agricultural domestic support for CGE modelling – The case of the European Union. At 2nd MAD Workshop – Macroeconomics of Agriculture and Development, November 19-20, 2015, Bordeaux, France.

Boulanger P, Philippidis G. 2020 Common Agricultural Policy in Spain – General equilibrium effects of a EU28 budget deal. At Xth Congreso Nacional de Economía Agraria, September 9-11, 2015, Córdoba, Spain.

Britz W, Dudu H, Ferrari E. Modelling food waste and food waste reduction in a CGE framework. At 29th International Association of Agricultural Economists Conference, August 9-14, 2015, Milan, Italy.

Kutlina-Dimitrova, Z. (2017). Can we put a price on extending the scope of the GPA? First quantitative assessment. DG TRADE Chief Economist Notes 2017-1, Directorate General for Trade, European Commission.

Kutlina-Dimitrova, Z. and Lakatos, C. (2017). The cost of protectionism: Are consumers willing to pay it?, GTAP conference paper, forthcoming.

Kutlina-Dimitrova, Z. (2015). The economic impact of the Russian import ban. GTAP 2015 Conference Paper.

Osman R, Ferrari E, McDonald S. Water Quality Assessment: a SAM/CGE Framework for Egypt. At 29th International Association of Agricultural Economists Conference, August 9-14, 2015, Milan, Italy.

Vandyck, Toon, Bert Saveyn, Zoi Vrontisi, Alban Kitous, Ariane Labat and Miles Perry (2015). Global Energy and Climate Outlook: Road to Paris - Assessment of Low Emission Levels under World Action Integrating National Contributions. At 18th Annual Conference on Global Economic Analysis, June 17-19, 2015, Melbourne, Australia.

Scientific Events

Seminar on Modelling for Policy Analysis, Organized by JRC D4 and IPAR, February 22, 2017, Dakar, Senegal.

Workshop on Modelling Impacts of national policies on Senegal economy, organised by JRC d4, WEER, Alterra, IPAR and AGRODEP, February 23, 2017, Dakar, Senegal.