

# GTAP Board Report

European Commission

As quantitative analysis gains importance in the European Commission's daily work, the use of the GTAP database and related models is becoming more widespread across different Directorates (DGs). This report summarizes GTAP-related activities of different DGs (between 2012-2013) with emphasis on priority areas.

## GTAP related activities

DG Trade uses the GTAP database and related models as part of our analysis of different trade policy initiatives carried out in-house and by external consultants. For instance, the GTAP database and model have been used to analyse the potential impacts of the EU-Andean Community FTA, EU-Central America FTA, EU-US FTA and EU-Singapore FTA.

The AGRILIFE unit at JRC-IPTS uses extensively GLOBE and MAGNET<sup>1</sup> to analyse the macro-economic and trade impacts of European agricultural trade policy reforms (e.g. bilateral (EU-US), regional (EU-MED) and multilateral trade agreements, CAP policy reforms on third countries; EU enlargement to Croatia; EU animal cloning ban). The Knowledge and Growth Unit at JRC-IPTS use the GTAP database as part of the RHOMOLO model.

DG MOVE, DG CLIMA and DG ENER use the GEM-E3 model, also build on the GTAP database. The GEM-E3<sup>2</sup> model has been previously used for the work on the Impact Assessments accompanying the 2050 Roadmaps adopted in 2011: White Paper - Roadmap to a Single European Transport Area (under the lead of DG MOVE), Energy Roadmap 2050 (under the lead of DG ENER) and A Roadmap for moving to a competitive low carbon economy in 2050 (under the lead of DG CLIMA). Currently, the three DGs are working together on the 2012 EU Reference scenario, which projects energy and transport trends and GHG emissions up to 2050, in absence of new policies beyond those adopted by spring 2012. The sectoral value added projections needed for the 2012 EU Reference scenario have been developed using GEM-E3 model.

## Contributions to the GTAP network

DG Trade is currently working on developing a version of the GTAP model and database that accounts explicitly for both global value chains and intra-firm trade linkages. As a first step, the GTAP database is disaggregated using WIOD in order to account for the sourcing of imported intermediate and final goods. This data is then further decomposed using data on foreign affiliates and related-party trade. The modelling framework uses the standard GTAP model as a starting point but accounts explicitly for global value chains and foreign affiliates.

The AGRILIFE unit at JRC-IPTS developed the *AgroSAMs* for the EU 27 Member states which represent the current EU table into the GTAP database since version 7.1. The main scientific value

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<sup>1</sup> Both global CGE models based on the GTAP database.

<sup>2</sup> [www.GEM-E3.net](http://www.GEM-E3.net)

added from these tables is the detailed disaggregation of agricultural activities. The process of further updating the AgroSAMs is currently under development with a view to their possible application in (i) single country CGE modelling efforts and/or (ii) as an input source for a future release of the GTAP database.

There is also on-going work to reclassify the representation of *domestic support* in the EU regions of the GTAP database. More specifically, for carrying out detailed baseline work, it is important to have detailed knowledge of the payment totals corresponding to each type of policy (i.e., first pillar decoupled and coupled payments, market measures, food safety expenditures, disaggregated rural development measures including competitiveness and environmental support, national payments etc.) at the regional and sectoral level. In the current documentation (not yet available for version 8), this is not entirely clear. Although the accompanying excel file provided by Hans Jensen is a big asset to those of us working on EU agricultural trade and policy topics, the 'exact' allocation of GCT and ACT payments by policy type is not entirely clear. The AGRILIFE unit has therefore employed its own criteria in allocating and recalibrating these payments into the GTAP database. Moreover, the second pillar payments (rural development) are incomplete and we look to supplement these with official statistics.

The AGRILIFE unit also works on improving the representation of *agricultural policy modelling* beyond that of the standard GTAP model and, indeed, the MAGNET model. In particular, the use of relevant data to calibrate quota rents, as well as a more detailed treatment of the Common Agricultural Policy (CAP) budget (including a detailed 'own resources' module).

As part of efforts for improving the GEM-E3 model, a study compared the GTAP7 macroeconomic and tax data for the EU with available statistical data and estimates (like the WIOD database, and EUROSTAT National Accounts). In addition, a VAT-model was developed which estimates the VAT by products and uses for each of the EU-countries. This makes it possible to have a more appropriate calibration and more realistic representation of the VAT-mechanisms in the GEM-E3 model.

## Priority areas

### 1. Public procurement

As highlighted by macro information in the GTAP database, public expenditure accounts on average for 17% of total world GDP, with strong variations across countries that range from 26% in Denmark and Sweden to 5% in Cambodia and Bangladesh. Despite the significant size of these public procurement markets and recent attempts to liberalize, we find that these markets are relatively more closed than others especially with respect to the market access granted to foreign firms. Furthermore, public procurement is an issue that is gaining significance in the context of bilateral trade agreements and in a multilateral setting. The analytical tools we usually use come short of being able to tackle these issues. The GTAP database offers a really good start since it separates government consumption from the rest of final demand but we would also need to separate public investment from total capital formation not to mention modify the modelling framework and quantifying the barriers to entry into these markets.

## 2. Improving tax data

As pointed out by different DGs, there is an urgent need to improve the representation of taxes in the GTAP database (at least for countries like EU Member States and OECD). Taxes are one of the main policy instruments available to governments in fields such as energy, climate, trade, agriculture, competitiveness etc. Moreover taxes have a prominent role in many (CGE) analyses using GTAP. The most relevant taxes to be looked at in the first place include:

- VAT, excises, sales taxes etc.
- Labour taxes (both income taxes, social security contributions, payroll taxes, etc)
- Green and energy taxes
- Capital taxes

We would be very happy to see a more detailed availability of data regarding TRQs (i.e., in-quota tariffs, over-quota tariffs and fill rates). Whilst CEPII employ information of this type to calculate ad valorem equivalents, the underlying data is not currently accessible.

## 3. Other issues

Concerning a better representation of sectors, DG MOVE would be interested in the split of sector 48 "Other Transport" into three sectors: road transport, rail transport and other, including pipelines, auxiliary transport activities; travel agencies. DG ENER, DG MOVE would also be interested in distinguishing the biofuels. Finally, the meat sector is one of the key sectors in the analysis of agricultural policies. A finer disaggregation of pig and poultry (both in livestock and meat) will help the analysis of domestic and trade policies.

With respect to regional disaggregation, the Balkans region is of great interest for the European Commission for further enlargement work. At the current time, Albania is the only country which is disaggregated (Croatia will be an EU member from July onwards).

Biofuels are becoming increasingly important in many economies and are key when analyzing energy markets, therefore it would be really useful to formally include biofuels as default in the GTAP database and not in a separate GTAP-BIO database.

The GTAP database could also benefit from the institutional transfers. i.e. completing the database towards a SAM. In this field the IPTS has commissioned a study to collect related data of the bigger world regions and investigate the possibilities of their reconciliation with and integration into the GTAP database.

## Selected publications

Andries Brandsma, d'Artis Kancs, Damiaan Persyn, 2013. "[Modelling Migration and Regional Labour Markets: An Application of the New Economic Geography Model RHOMOLO](#)," VIVES Discussion Paper Series 36, Catholic University Leuven, Faculty of Economics and Business, VIVES Research Centre for Regional Economic Policy.

Boulanger, P.H., Philippidis, G. and Vinyes, C. (2013) "[The impacts of a CAP budget reform on the world economy: A CGE assessment](#)" (working title) Paper prepared for the 16<sup>th</sup> GTAP Conference, June 2013, Shanghai (China).

Ciscar, JC, Saveyn, B., Soria, A., Szabo, L., Van Regemorter, D., Van Ierland, T. (2013). [A Comparability Analysis of Global Burden Sharing GHG Reduction Scenarios](#). Energy Policy 55, 73-81.

Ciscar Martinez J, Saveyn B, Soria Ramirez A, Szabo L, Van Regemorter D, Van Ierland T. A (2012). [Comparability Analysis of Global Burden Sharing GHG Reduction Scenarios](#). JRC Scientific and Technical Reports. EUR 25222 EN.

d'Artis Kancs, Pavel Ciaian, 2012. "[The Factor Content of Heterogeneous Firm Trade](#)," *World Economy*, 35(3), 373-393.

European Commission (2013), "Analysis of the impact of Croatia's to the EU on the agri-food sectors. A focus on trade and agricultural policies". JRC Technical and Policy Report, forthcoming.

European Commission (2013) "Contribution to the economic impact assessment of policy options to regulate animal cloning for food production with an economic simulation model". EUR 25856; JRC Technical and Policy Report.

European Commission (2012). "Review of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases" Commission Staff Working Document. [Impact Assessment](#) (COM(2012) 643 final, SWD(2012) 364)

Kitous, A., Saveyn, B., Gervais, S., Wiesenthal, T., Soria, A. (2013). [Analysis of Iran Oil Embargo](#). JRC Scientific and Technical Reports. EUR 25691 EN.

Klaassen G., Nill J., van Ierland T., Saveyn B., and Vergote S. (2012). [Costs and Benefits of Reducing the EU's Greenhouse Gas Emissions by 30% in 2020](#). Review of Business and Economic Literature 57 (2), 157-178.

Lakatos C., Fukui T (2013). US-EU Trade Linkages: the Role of Global Value Chains and Intra-Firm Trade. Paper prepared for the 16<sup>th</sup> GTAP Conference, Shanghai, China

Maisonnave H, Pycroft J, Saveyn B, Ciscar Martinez J. (2012). [Does climate policy make the EU economy more resilient to oil price rises A CGE analysis](#). JRC Scientific and Technical Reports. EUR 25224 EN.

Maisonnave H, Pycroft J, Saveyn B, Ciscar Martinez J. (2012). [Does climate policy make the EU economy more resilient to oil price rises A CGE analysis](#). Energy Policy 47, 172-179.

Piroli, Giuseppe, Ciaian, Pavel, Kancs, d'Artis, 2012. "[Land use change impacts of biofuels: Near-VAR evidence from the US](#)," *Ecological Economics*, 84(C), 98-109.

Sanjuan Lopez, A.I., Philippidis G. and Resano, H., (2013) "Estimating non-tariff measures (NTM) for US-EU trade - implications for CGE model estimates"; [Paper](#) prepared for the 16<sup>th</sup> GTAP Conference, June 2013, Shanghai (China).

Saveyn, B., Paroussos, L., and Ciscar, JC. (2012). [Economic analysis of a low carbon path to 2050: A case for China, India and Japan](#). Energy Economics 34 (3), S451-S458

Tao Xiang, Jikun Huang, d'Artis Kancs, Scott Rozelle, Jo Swinnen, 2012. "[Food Standards and Welfare: General Equilibrium Effects](#)," *Journal of Agricultural Economics*, 63(2), 223-244.

"Trade openness and investment in North Africa. [A CGE application to DCFTAs between the EU and respectively Egypt Morocco and Tunisia](#)"; Paper prepared for the IATRC Symposium, June 2013, Seville (Spain).

"[Trade liberalization, increasing food prices and productivity growth: A recursive dynamic CGE analysis for Turkey](#)"; Paper prepared for the IATRC Symposium, June 2013, Seville (Spain).

"[Climate change, agriculture and trade liberalization: A dynamic CGE analysis For Turkey](#)"; Paper prepared for EconAnadolu 2013 Conference, June 2013, Eskisehir (Turkey).