

GTAP Board Report

International Food Policy Research Institute

July 2014 – June 2015

Most of the GTAP-related work carried out at IFPRI has been done at MTID (Markets, Trade and Institutions Division) by the trade team. This team works on the impact of globalization on poverty and food security, to help national policy makers, researchers, international organizations and agriculture-sector stakeholders in developing and developed countries to better evaluate the implications of different scenarios of trade liberalization. It is also designed to help decision makers develop adequate related policies and societal responses for rural development, poverty alleviation, and food security, including alleviation of the economic barriers that prevent farmers in developing countries from benefiting from greater market-based opportunities. Policy changes supported by this research are expected to accelerate income growth through increased access to both domestic markets and international trade. The research under this program emphasizes global agricultural trade negotiations, linkages between domestic policies and globalization, the impact of developed-country policies on developing-country food security, and pro-poor policies along the entire food chain, given the growing importance of consumers and retail industries as food system drivers.

The team

The Macroeconomics and Trade team is currently composed of: Antoine Bouet, Lauren Deason, Eugenio Diaz-Bonilla, Betina Dimaranan, Joseph Glauber, Kathryn Pace Kincheloe, David Laborde, William Martin, Sam Morley, David Orden, Devesh Roy, Marcelle Thomas, Simla Tokgoz, and Fousseini Traore. The team is directed by David Laborde.

The 17th annual GTAP conference

Let us remind that the 17th annual GTAP conference was co-organized by GTAP and AGRODEP/IFPRI. The 17th Annual Conference on Global Economic Analysis was held in Dakar, Senegal from June 18-20, 2014. The conference brought together economists from all over the world to discuss issues of food policy, trade, and economic vulnerability, with a particular focus on Africa. Given this focus, one of the conference organizers' biggest goals was to have a strong representation from African scholars. The organizers hoped to encourage a strong link between these scholars and the GTAP network of researchers, particularly economists and modelers. This emphasis paid off, with over 50 participants coming from across Africa. Forty of these participants received scholarships covering all conference expenses from UNECA, WTO, AGRODEP, and IFPRI's Food Security Portal. This marks the first time that economists from developing countries have been provided with financial assistance to attend GTAP's annual conference.

Sponsors for this conference include the CGIAR Research Program on Policies, Institutions, and Markets (PIM), IFPRI's Food Security Portal, the United Nations Economic Commission for Africa (UNECA) and the World Bank. Conference Partners included the World Trade Organization (WTO). Funding went to several different portions of the conference, including scholarships, plenary speakers, the conference venue, and several conference events including receptions and entertainment. Notably, 40 scholarships were awarded for African researchers. AGRODEP funded 28 scholarships, the Food

Security Portal funded 2 scholarships, UNECA funded 8 scholarships, and the WTO funded 2 scholarships.

In total, 263 abstracts were submitted for the 2014 conference and 169 people presented their work. Out of all 263 abstract submissions, 31% were submitted by authors located in Africa, not including submissions from South Africa which accounted for an additional 2% of submissions.

Selected Trade-Related Projects in 2014-2015

The work carried out in IFPRI's MTID-GRP2 that employs GTAP database addresses several broad themes: impact of trade liberalization on poverty, trade integration, and construction of SAMs.

1. *Evaluation of Economic Partnership Agreement between the EU and West Africa*

The trade team, in particular Antoine Bouet, David Laborde and Fousseini Traore, conducted two evaluations of the Economic Partnership Agreements implemented by the European Union with African, Caribbean, Pacific (ACP) countries. Both evaluations are conducted under a framework contract with EU commission (DG Trade) to provide economic analysis in support of trade negotiations and trade policy issues.

A first research project is aimed at evaluating the economic effects of the West Africa Economic Partnership Agreement (EPA) on ECOWAS countries in terms of welfare, production, government revenue and poverty. The CGE model used in this project is MIRAGRODEP. This is a recent version of MIRAGE, developed for the AGRODEP initiative. For this study MIRAGRODEP has been improved in three directions:

- (i) A **dual-dual economy** with labor market fragmentation (rural versus urban sector, formal vs informal sectors). This improvement is important since because productivity and wages differentials imply different effects of trade policies.
- (ii) **Fiscal revenues.** The topic of fiscal revenue is a key issue of these trade negotiations, in particular since West African governments are worrying of losing an important source of public revenues. Consequently a specific modeling effort has been undertaken to gauge the impact of the trade agreement on public revenues, in particular to account for existing fiscal inefficiency and move from **nominal duties to actual revenues**. Moreover the approach here prioritizes the “**Consistent Aggregator Approach**” for import tariffs. This approach allows to capture the exclusion effects at a detailed level and the variance of tariffs.
- (iii) The Development Program. Finally a specific attention was put on modeling the elements that address the Economic Partnership Agreement Development Program included in the EPA agreement, elements included to boost African farmers and firms' competitiveness.

The CGE approach is complemented by a top down micro-simulation in order to study the impact of this trade agreement on poverty and inequality. This is based on a micro-macro distributional toolbox (see <http://www.agrodep.org/model/micro-macro-distributional-analysis-toolbox>). In order to evaluating the poverty impact of the agreement, the micro-simulation exercise is conducted for two countries: Nigeria (based on 2011 households survey), and Ghana (based on 2005/06 households survey).

For this project, we have used the GTAP9 pre-release v.2 database. Several fixes were applied based on selected checks. More importantly for this project, an important effort was due to improve the

fiscal information on the West African SAMs and a complete new dynamic baseline for tariffs were built (starting from 8 digit level information).

2. *Impact of trade liberalization on poverty*

There is currently one project (two working papers) in progress from the IFPRI Macroeconomics and Trade team introducing household data to the MIRAGE model:

This project has developed a version of the MIRAGE model with household heterogeneity and a public agent, to better analyze the impact of trade liberalization and other trade reforms on real income and welfare at the household level. This new version better captures the behavior of the public agent in terms of revenues collected and in terms of expenditures. It also disaggregates the representative household into up to 13-300 household categories in eight developing countries. The sources of income and consumption structure reflect disaggregated statistical information coming from households' surveys. Since domestic remittances may constitute an important determinant of income redistribution, the new version also endogenizes private inter-households transfers. This new version of MIRAGE takes into account the reaction of households to these shocks in an integrated and consistent framework. We study the impact of full trade liberalization on these households. This study concludes that: (i) while the impact of full trade liberalization may be small at the macroeconomic level, the effect on households' real income may be quite substantial at the household level with a great heterogeneity; (ii) the major channel of heterogeneity of the impact of trade liberalization on households' real income is productive factors' remuneration while the impact of consumption prices of commodities is limited; (iii) various domestic policies simultaneously implemented to trade liberalization like modification of public transfers to households or changes in income taxation may significantly change the picture and offer compensation for negative effects of this shock or amplify direct impact of full trade liberalization; (iv) the impact of trade reform on poverty and inequality is significant and diverse from one country to the other.

For this project, we have used the GTAP8 database. For the 8 countries of interest, GTAP SAMs were updated and fully reconciled with household survey information (cross-fertilization approach relying on hierarchical methodology and/or cross-entropy).

3. *Analysis of EU biofuel policies on land use under alternative global and regional governance options*

This project is a follow up on the work performed for the European Commission, which modeling results (iLUC coefficients) were officially include in the EU laws after a final vote by the European Parliament on April 2015. In this study, using an updated version of the MIRAGE-Biof model and database, alternative governance (land use regulation and availability, agricultural development policies).

This analysis is based only partially on GTAP 8 database but **all the agricultural accounts are replaced** in order to have accounts consistent in terms of value and volume, and the database is expanded to **87 products** (new agricultural products, co-products, biofuels). Finally, the land use dataset based partially on the AEZ classification and on sub-land markets redefined to match regional statistics for Indonesia, Brazil and Ukraine.

4. *Nutrition and Trade*

There is a large strand of literature examining the patterns of trade flows and their determinants as well as the consequences of trade policy reform. Such studies generally focus on trade flows in terms of either value or volume. In the context of food security, however, knowing the value or even volume

of imports may not be adequate to understand how countries rely on international trade as a source of food and nutrition. In this project, we examine the patterns of international food trade in terms of nutritional content, including caloric, fat and protein content of produced, consumed and traded goods. By doing so, we are able to answer questions about the pattern of trade in nutritional content and the structure of protection viewed from a food security perspective, **looking at heterogeneity within the GTAP sectors**. The database was built in a bottom-up approach using **HS6 level trade information and nutritional coefficients** and reconciled with the **FAO food balance sheet**. It allows to generate nutritional coefficients for domestic production, consumption and trade flows in for the GTAP sectors capturing heterogeneity among countries, including for bilateral flows.

GTAP- and trade-related publications

Laborde, D. M. Padella, R. Edwards and L. Marelli. “New iLUC results of the MIRAGE-Biof model”. JRC Scientific and Policy report. Joint Research Center ISPRA, European Commission.

Laborde, D. and L. Deason . “Estimating EU biofuel policies land use impacts under alternative global and regional governance”. GoViLa discussion paper. 2015.

Bouet A., Laborde D. and F. Traore, 2015, The Trade and Development Impact of the European Union-West Africa Economic Partnership Agreement, IFPRI Discussion Paper.