GTAP Advisory Board Report 2019

World Trade Organization

In three different areas CGE-related research has been conducted at the WTO. First, the WTO Global Trade Model, developed by the GTAP-Center in co-operation with WTO economists in 2018, has been intensively used by the WTO for research and policy analysis. Second, together with DG Trade of the European Commission, the WTO has completed a project to compile services trade data by mode of supply. Third, the WTO Chairs, universities in developing countries cooperating with the WTO, have applied the GTAP-tools to a range of topics.

Work with the Global Trade Model

The Global Trade Model is a recursive dynamic CGE model, built as a dynamic extension to the facelift version of the core GTAP model, including a module with monopolistic competition and firm heterogeneity. The model has been employed since the last GTAP conference to project the effects of a potential global trade war, to generate projections on US agricultural trade, to evaluate the repercussions of the China-US trade tensions for the countries in ASEAN, to develop different global trade policy scenarios, to determine the uncertainty effects of the 2018-2019 trade tensions (with the firm heterogeneity version of the model), and to make projections on services trade for the WTO's 2019 World Trade Report (forthcoming). In this process various components have been added to the model, necessary for the construction of a credible baseline. This work will cumulate in the publication of a baseline projection for long run global trade, in co-operation with researchers at the GTAP Center.

Trade in services by mode of supply (TISMoS)

TISMoS is a new WTO database, providing a time series (2005-2017) of trade in services flows for a large set of reporters and sectors. The partner is world but the methodology used to build the TISMOS dataset (the shares) can be applied to bilateral flows available from the databases above. For Modes 1,2 and 4, the dataset covers 216 reporters and 59 EBOPS sectors. For Mode 3 the database covers 196 reporters and 11 ISIC sectors.

Research of WTO Chairs

The WTO Chairs Programme aims to support and promote trade-related academic activities by universities and research institutions in developing and least-developed countries. Several of these WTO Chairs have used the GTAP model for their research. These include:

South Africa's Chair:

- Determining the impact of utilizing the realistic export opportunities of China to the BRI (Belt and Road Initiative) countries using TRADE-DSM and GTAP

Oman's Chair:

- Ahmed Al Shamakhi, Abdallah Akintola, and Houcine Boughanmi (2018) "Assessing the impact of WTO Trade Facilitation Agreement on Oman’s Economy" International Journal of Trade, Economics and Finance, Vol. 9, No. 6, 244-250.
- Houcine Boughanmi and Muhammad Aamir khan (2018) "Welfare and Distributional Effects of the Energy Subsidy Reform in the GCC Countries: the Case of Sultanate of Oman",

http://wtochairs.org/sites/default/files/Energy%20Subsidy%20reforms_accepted%20IJEEP.pdf

Mauritius' Chair:

- Rojid Sawkut, Seetanah Boopen, Sannassee Vinesh, Tandrayen Verena and Lamport Matthew "The impact of EU Guaranteed Sugar Price Reduction on Mauritius". http://www.wtochairs.org/sites/default/files/EU_Guaranteed_Sugarto_publishJIBE.pdf

China's Chair:

- The development modes of China's free trade areas: A General Equilibrium Analysis based on GTAP model.

Planned CGE-Work

In the summer of 2019 we will complete the construction of a baseline projection of the global economy, based on standard approaches in the literature (targeting projections on population, employment and GDP growth from other institutions) extended with a range of additional features such as differential productivity growth, changing preferences, changes in trade policies, adjusting savings rates and extensions of the existing trade balance closure. A workshop is planned to discuss the baseline with both experts from academia and research institutes and with representatives of member states.

Publications

Structural change in the Chinese economy and changing trade relations with the world

Eddy Bekkers, Robert Koopman and Carolina Lemos Rego. CEPR Discussion Paper No. DP13721

This paper examines the impact of structural change in China, in particular a reduction in the savings rate, an increase in the share of skilled workers, and an increase in productivity in technologically advanced manufacturing sectors targeted by Made in China 2025. Baseline projections until 2040 are generated with the WTO Global Trade Model, a dynamic computable general equilibrium model. With the modelled structural changes the Chinese economy is projected to reorient its focus increasingly onto the domestic economy, raising the share of private household and government consumption in GDP, turning China's trade surplus into a trade deficit, reducing China's share in global exports, raising the share of services in both production and exports, shifting the destination markets of Chinese exports from developed to developing countries, and changing its pattern of comparative advantage away from sectors like light and heavy manufacturing to electronic and machinery equipment. The large bilateral trade surplus vis-a-vis the United States is projected to fall to almost zero.

Challenges to the trade system: The potential impact of changes in future trade policy

Eddy Bekkers. Journal of Policy Modelling May 2019

Current tensions in global trade policy raise the question which direction global trade will take in the future. In this paper a dynamic computable general equilibrium (CGE) model is employed to explore the impact on the global economy of five scenarios for future trade policy: passive isolation of the US; active isolation of the US; a global trade war; a breakdown of trade cooperation; and a revival of multilateralism. The simulations show that future trade policy could have important consequences for global trade: for the importance of different regions in the global economy; for the growth of global trade; for real incomes in different regions; and for the organization of global value chains. The simulations indicate that the US share in global trade would fall moderately under passive and active isolation and considerably under the trade war scenarios. The share of manufacturing in GDP is hardly affected by trade policy and mainly driven by structural change. Real income in the US would fall in most scenarios, whereas China would suffer substantially from a global trade war and the EU heavily from a breakdown of trade cooperation. The trade-to-income elasticity varies from more than 1.3

under a revival of multilateralism to 0.5 under a breakdown of international cooperation. Value chains are projected to shift away from the US towards other regions in the isolation scenarios.

Potential economic effects of a global trade conflict

Eddy Bekkers and Robert Teh. WTO Staff Working Papers 2019-04

The WTO Global Trade Model is employed to project the potential medium-run economic effects of a global trade conflict. The trade conflict scenario is based on recent estimates in the literature of the difference between cooperative and non-cooperative tariffs. The study provides three main insights. First, the projected macroeconomic effects in the medium run are considerable. A global trade conflict started in 2019 would lead to a reduction in global GDP in 2022 of about 1.95% and a reduction in global trade of about 17% compared to the baseline. For context global GDP fell about 2.1% and global trade 12.4% in the global financial crisis of 2009. Second, behind the single-digit aggregate production effects there are much larger, double-digit sectoral production effects in many countries, leading to a painful adjustment process. In general, global trade conflict leads to a reallocation of resources away from the most efficient allocation based on comparative advantage. Third, the large swings in sectoral production lead to substantial labor displacement. On average 1.15% and 1.74% of high-skilled and low-skilled workers respectively would leave their initial sector of employment.

A Parsimonious Approach to Incorporate Firm Heterogeneity in CGE-Models

Eddy Bekkers and Joseph Francois. Journal of Global Economic Analysis Dec. 2018

This paper proposes a parsimonious and intuitive way to incorporate Melitz-type firm heterogeneity in a CGE-model based on the conventional Armington trade structure. The Armington trade structure is extended with demand, supply, and trade cost shifters. Each sector can be modelled as either Melitz, Ethier-Krugman, or Armington, depending on the specification chosen for the shifters. The trade structure of the model can be calibrated based on two estimable parameters: the trade or tariff elasticity and the shape parameter of the size distribution of firms. With this setup fixed and iceberg trade costs are calibrated jointly based on observed import shares. The structure is incorporated within the standard GTAP model and changes to the GEMPACK code are discussed in detail. Changes in both trade values and welfare are decomposed. Experiments with global reductions in iceberg and fixed trade costs are simulated in a medium-size model with 11 countries, 11 sectors, and 6 production factors. The experiments show that the welfare effects are largest under Melitz, followed by Ethier-Krugman and Armington, although differences are modest.

Exploring the Economic Impact of Changing Climate Conditions and Trade Policies on Agricultural Trade: A CGE Analysis

Eddy Bekkers and Lee Ann Jackson Federal Reserve Bank of Kansas City Economic Review July 2018

Agriculture trade can play a significant role in determining economic outcomes, including economic growth, rural employment and food prices. In the future changing climate conditions may alter the relative productivity of regional agricultural production and, as a result, also affect the trading patterns. Agricultural support and trade policies can also affect the decisions of farmers, consumers and traders. This paper explores the potential impact of climate change related productivity growth and trade policy decisions on global economic outcomes including exports and imports, import dependency and export market concentration. Based on CGE model simulations, the analysis examines the impact of changes on production of specific agricultural crops and products and the resulting changes in prices and trade.