

THE WORLD BANK GROUP

2017 GTAP Advisory Board Report

Trade and Competition Global Practice

Future of Manufacturing

The Trade and Competitiveness Global Practice, in partnership with the Development Prospects Group, is producing a report on the impact of emerging technologies and changing patterns on globalization on the manufacturing sector, and subsequently on development. For the forward looking analysis, the report is using the LINKAGE model and the GTAP Database V9 to examine a range of scenarios for the global economy that characterize the envelope of possible impacts of technology on production and tradability, and of shifts in protectionism and structural change in the Chinese economy.

Argentina flagship report: Trade Policy Reform

Brazil productivity flagship

The LINKAGE model is being used to consider the impact of several different unilateral trade policy interventions and FTAs for Mercosur with a special focus on Argentina and Brazil. The database being used is an updated version of the GTAP Database V9, adjusted with the latest protection data, IO tables for Argentina, and trade flows using the GTAPAdjust and Altax tools. The database is disaggregated to 80+ sectors, to allow for careful analysis of sectors most relevant for Argentina's and Brazil's trade agreements, with the regional aggregation being condensed down to 32. The benchmark year is updated to 2015. For the unilateral policy actions considered, the scenarios include Argentina's and Brazil's unilateral liberalization of tariffs on high protected sectors, liberalization of export taxes, and removal of other import restraints. For the multilateral policy actions, the scenarios include Mercosur-EU and Mercosur-Pacific Alliance FTAs, and the deepening of Mercosur integration. The analysis is being used to help inform Argentina's and Brazil's choice of trade policy options.

Indonesia: Trade Policy Options

The LINKAGE model and GTAP Database V9 are being used to consider different trade policy options for Indonesia. The analysis covers EU-Indonesia FTAs, RCEP, FTAAP, TPP11 (no Us), TPP15 (no US, but Korea, Philippines, Indonesia and Thailand). Sensitivity analysis incorporates additional gains from openness through productivity improvements. Trade and income distribution impacts are also added based on the microsimulations using the Global Income Distribution Dynamics (GIDD). The results are being used in a dialogue with the Ministry of Trade to inform Indonesia future trade strategy.

Unlocking the Productive Potential of Sri Lanka through Trade and Investment

The LINKAGE model and GTAP Database V9 were used to consider different trade policy options for Sri Lanka. The analysis evaluated the impact of the removal of tariffs and para-tariffs based on detailed customs data covering all taxes and fees. The analysis also considered impacts of Free Trade Agreements with China, India, Pakistan and Singapore. The impacts of trade policy liberalization were supplemented with the analysis of impacts on poverty. The results were presented to the Prime Minister and the Ministry of Trade of Sri Lanka.

Lesotho: Trade Integration Strategy

At the request of the Trade Minister of Lesotho, the LINKAGE model and GTAP V. 9 data base were used to evaluate impacts of the loss of AGOA preferences and a potential bilateral US-Vietnam FTA along the lines of the US and Vietnam commitments under the TPP. The additional scenarios cover improvements in trade facilitation and productivity growth in services increasing Lesotho's competitiveness on global markets. The analysis is being used to inform the future trade integration strategy of Lesotho.

Finance and Markets Global Practice

Russia- China and India project

We are using GTAP data base to calibrate a CGE model allowing to quantify and assess the impact of a slowing China and growing India on Russian economy. The CGE modeling framework is ENVISAGE, a multi-sector, multi-regions model developed by Van der Mensbrugge (2015). ENVISAGE is calibrated based on the GTAP global data including 141 countries, 57 activities, 57 product sectors, 6 factors of production, and 1 household. we are considering four scenarios: i) China growth slowdown; ii) China economic rebalancing; iii) India growth expansion; and iv) a combination of China slowdown, China rebalancing and India expansion.

Haiti and the Dominican Republic

For the " Migration, Remittances and Development on Quisqueya Island" project, we are using the GTAP data base to update the DR SAM and create a SAM for Haiti. The study aims to analyze the impact of bilateral migration and remittance flows on both the Dominican and Haitian economies, including: (i) the possibility that migrants from Haiti displace Dominican native workers or put downward pressure on wages; (ii) the potential burden on government revenues in the Dominican Republic because Haitian migrants tend to work in the informal sector and may not pay income tax, while they use free public resources, such as health and education services; (iii) the potential for remittances to Haiti to put pressure to the exchange rate (via a Dutch disease effect) and to reduce the incentives for the Haitian residents to work; and (iv) the impact of the remittance from the DR on growth and poverty reduction in Haiti. Our empirical analysis relies on two complementary approaches: i) First, a simple micro incidence analysis based on labor force surveys and expenditure surveys to assess the impact of migration on labor market, and welfare; and ii) a two-country Computable general equilibrium (CGE) model allowing to assess the impact on growth and macro indicators.

Slovakia

We are utilizing the GTAP Power database to calibrate a CGE model designed to analyse policies which support sustainable growth in Slovakia. The CGE model used is ENVISAGE, a multi-sector, multi-regions model developed by Van der Mensbrugge (2015). The CGE model is linked to a detailed energy-market model for Slovakia. This allows the modelling framework to estimate the economy-wide effects (including the effects on emissions) of detailed energy market policies. The Slovak Ministry of Environment will use the tools to design policies which assist Slovakia in meeting its GHG abatement targets.

Development Prospects Group

Lakatos, Csilla, and Delfin S. Go. 2017. “The Long-Run Impact of China’s Rebalancing on Developing East Asia and Pacific.” In “Sustaining Resilience – World Bank East Asia Economic Update April 2017.” World Bank, Washington, DC

China’s ongoing reform process will lead to a rebalancing of its economic structure, and slower but more sustainable growth, with potentially significant repercussions for the rest of developing East Asia and Pacific (EAP). The analysis uses LINKAGE, a dynamic, multiregion, multisector, multifactor computable general equilibrium model (van der Mensbrugghe 2011, 2013). It relies on the Global Trade Analysis Project (GTAP) 9.1 global trade database for 2011. The implications of China’s rebalancing for other countries in developing EAP are analyzed by contrasting outcomes under “full reform” with those under “partial reform.” Overall, across most of developing EAP, full reform leads to terms-of-trade gains, and increases in exports and consumption. In economies that specialize in the production of low-value-added manufactures including textiles and apparel, such as Cambodia and Vietnam, or low-tech electrical and electronic items, such as Malaysia and the Philippines, firms benefit from higher world prices and expand domestic supply and exports. Conversely, the fall in the price of capital goods boost imports of these products, with a positive overall effect on total imports.

Lakatos, Csilla and Maryla Maliszewska. 2017. “The Impact of US Trade Policy Changes on South Asia.” In “Globalization Backlash – South Asia Economic Focus April 2017.” World Bank, Washington, DC.

The South Asia Economic Focus explores the economic effects of different scenarios implying changes in US trade policy and growth and their impacts on South Asian economies. The scenarios are the following: a) A 10 percentage point increase in US tariffs on all exports from China and Mexico; b) retaliation scenario, in which China and Mexico respond with a symmetric 10 percentage point tariff increase on US exports; c) a 5 percentage point increase in US tariffs on all exports from all countries; and d) Additional growth of one percentage point in the US in 2018 and 2019. The model underlying the simulations is LINKAGE - a dynamic, multi-region, multi-sector and multi-factor computable general equilibrium (CGE) model fully documented in van der Mensbrugghe (2011, 2013). The version of LINKAGE used here relies on GTAP 9.1, a global database for 2011.

Development Economics Agriculture and Rural Development

Fukase, Emiko and Martin, Will, December 2016, “Agro-Processing and Horticultural Exports from Africa.” The United Nations University World Institute for Development Economics Research (UNU-WIDER) Working Paper, 174 . (Also submitted to World Bank Policy Research Working Paper).

Sub-Saharan African exports of horticultural and processed agricultural products are growing in line with the major shift towards these products in world markets. Continued growth in these exports may be vitally important for expanding returns from African agriculture and for increasing its overall exports. Using GTAP 9 database, our simulation results reveal that policy reforms such as reductions in the tariff escalation facing Africa, improvements in the productivity of agricultural processing, and reductions in trade barriers within Africa and beyond would all further stimulate

exports of processed agriculture. While essential, expansion of these exports should be regarded as complements to—rather than substitutes for—development of other dynamic export sectors.

Environment and Natural Resources Global Practice

S. Sahin, G. Timilsina and S. Pargal (2017), Economy-wide Effects of Electricity and Gas Price Changes in Bangladesh: A Computable General Equilibrium Analysis.

Bangladesh Electricity Regulatory Commission requested from the World Bank a study on the economy-wide impact of increases in electricity price changes in Bangladesh (2014). The motivation behind this request was twofold: First, an assessment of the significant fiscal burden of protecting consumers from increased power purchase cost due to rental plants that motivates periodic increase in tariffs. Second, an assessment of economy-wide impact of end user electricity price increases through gas tariff adjustment on key macro-economic indicators such as fiscal balance and GDP. Based on a recent SAM for Bangladesh and GTAP-E CGE model, this analysis would serve to correct misperceptions about the overall economic impact of tariff revisions.

S. Sahin, A. Golub, A. Markandya, B. Narayan and F. Taheripour (2017), Water Resources in South Asia: An Assessment of Climate Related Vulnerabilities.

South Asia faces serious challenges in water availability, which are expected to increase in the coming years as populations and demand for food grow, the competition for water from non-agricultural sectors increases, and climate change aggravates the water stress in some river basins. Even without taking account of climate change the amount of water available for irrigation is estimated to drop by between 20-40 percent in several important river basins in the region. The additional impact of climate change is variable and could be positive in some basins but add to the scarcity in others. Also sea level rise and water related extreme events are predicted to have adverse effect on South Asian economies.

This paper analyzes these consequences in an economy-wide context. It separates the implications of the growing scarcity of water in South Asia for economic and demographic reasons from those related to climate change. Furthermore, it evaluates specific measures that could be taken to address the economic and physical constraints against sustainable water management in the region. The aim is to develop a comprehensive analytical basis to support South Asia's decision-makers in promoting policies that achieve higher levels of water efficiency, facilitate economic growth in the presence of water scarcity, and promote climate resilience to help farmers to maintain their income in the face of severe climate conditions.

Analysis is developed on the basis of a modified version of the GTAP-BIO-W model developed by the Purdue team for South Asia.

To be presented at the GTAP conference (2017).

S. Sahin (2017), Macro-economic Implications of Climate Change in Bulgaria.

GTAP-BIO-W for Bulgaria is used to assess the social and economic implications of climate change impacts and adaptation actions in Bulgaria, and highlight the costs of inaction and the benefits of climate action within an economy-wide framework. Model structure and scenario design were discussed at a stakeholder's workshop on February 2017. This CGE analysis part of Bank's knowledge products (RAS) for Bulgaria and uses a modified version of the GTAP-BIO-W model developed by the Purdue team for South Asia.

S. Sahin, A. Markandya and B. Narayan (2017), Climate Induced Migration in Ethiopia: Estimating Long Term Economic Consequences in an Economy-wide Model.

GTAP AEZ model was used to The objective of this paper is to estimate the cascading effects from climate induced migration on the Ethiopian economy. An economy-wide model is developed to inform the decision makers about the economic conditions that are key determinants for migration at the AEZ levels for Ethiopians: employment opportunities, and better paid jobs. The long run model simulations will also allow to assess the macro-economic impact of migration on the Ethiopian fiscal and external balances, therefore inform how sustainable (durable) would be the projected migration trends.

S. Sahin, and B. Narayan (2017), Turkey's NDC Targets: A Quantitative Assessment

Turkey achieved 230 per cent increase in GDP between 1990 and 2012. Its population has increased more than 30 per cent since 1990. Turkey's energy demand increases by 6-7 percent every year. Turkey is listed in Annex I to the UNFCCC. However, Decision 1/CP.16 recognized the special circumstances of Turkey and placed Turkey in a different situation than the other Parties included in Annex I. Turkey aims to contribute to the collective efforts to combat climate change in line with its national circumstances and capabilities. With this perspective, National Strategy on Climate Change and National Climate Change Action Plan were adopted in 2010 and 2011 respectively. National Climate Change Action Plan consists of emission control and adaptation policies and measures which are being implemented in all relevant sectors. In this paper, authors develop an economy-wide CGE model (GTAP-EPower) for Turkey where energy consumption for household and firms will be tracked in details for 2010-2017 and analyze potential economic and environmental benefits from energy efficiency improvement towards meeting the NDC goals in 2030.

S. Sahin and A. Dardari (2017), Towards a Blue Print on Recovery and Reconstruction in Yemen.

GTAP model was used based on a recent SAM (IFPRI, 2017) for Yemen. Several growth scenarios were developed for the Yemeni economy towards 2030 including with and without external assistance, regional trade agreements and earmarked investments in human development sectors. The Blue Print served in advancing Bank's engagement in the Middle East region.

Training:

On 2017, training activities were also offered on GTAP related work by Bank staff on the "Economy-wide Effects of Electricity and Gas Price Changes in Bangladesh: A Computable General Equilibrium Analysis".

Health, Nutrition, and Population Global Practice

Demographic dividends in Sub-Saharan Africa

The Health, Nutrition, and Population Global Practice commissioned an analysis from the Development Prospects Group for a LINKAGE-GIDD analysis that examines the impact of different demographic projections (reflecting the different fertility assumptions of the UN WPP 2015 Revision) on growth and poverty. This was based on a modified version of the GTAP Database V9, where the following economies were disaggregated – Democratic Republic of the Congo, Sudan, and Niger. The data for Sudan was kindly shared by Khalid Siddig and the data for Niger and DR Congo by Hans Lofgren. The findings of these analyses are being used by the HNP GP for the Bank's engagement in several economies.