

Agency Report on GTAP at the World Bank, 2008-9

The GTAP data and/or model have been used in many parts of the Bank, but primarily in the Development Prospects Group and the Development Research Group. It has also been used extensively in the Poverty Reduction in Economic Management (PREM) network. Other applications include use of the GTAP data to assess the energy intensity of trade for the *World Development Report*.

Development Prospects Group (DECPG)

1. One of the key activities this year has been work on climate change. In the past year, the ENVISAGE model has been upgraded with the following features:

- Re-based to GTAP release 7.0.
- The model time horizon has been extended to 2100 including increased flexibility over inter-year intervals.
- Incorporation of other greenhouse gas emissions—87-region GTAP 6 has been adjusted to 113-region GTAP 7 and incorporated in the model. The climate module has been modified accordingly to handle the additional greenhouse gases.
- The electricity sector has been split into 5 streams—coal, oil & gas, hydro-electric, nuclear and renewables. A supply limit has been imposed on hydro-electricity.
- New technologies have been introduced and are being tested—1st and 2nd generation biofuels, coal and gas carbon capture and storage (CCS) in the power sector.
- Resource depletion modules are being developed and tested for oil and natural gas.
- Work is ongoing on the demand side (M/AIDADS).
- In separate work with the Development Research Group (DECRG) we are focusing more on biofuels with more details on country specific production technologies, the split of other coarse grains into maize and other, and implementation of biofuels policies.

2. The ENVISAGE model was used to analyze different potential medium-term (2030) scenarios with a focus on commodity markets. This work was done in the context of the annual *Global Economic Prospects 2009 Report* “Commodities at the Crossroads”. This work also includes continued use of our unit’s global micro-simulation model—known as the Global Income Distribution Dynamics (GIDD) model, that is also being used in the context of the climate change work. Presentations based on ENVISAGE were made in China, Indonesia, Costa Rica, the United Kingdom, the IMF and the World Bank and the model was also part of the EMF-22 exercise.

3. The trade agenda is being pursued (in collaboration with DECRG) using the LINKAGE model. Focus still on the Doha Development Agenda with new work on solving the aggregation bias inherent with working at the GTAP level of aggregation. We are currently implementing a new methodology based on theoretical work of James Anderson.

4. The international migration version of LINKAGE (calibrated to GTAP 6) has been used to undertake some new scenarios for UNDP's forthcoming *Human Development Report*.

5. Dominique van der Mensbrugge is developing new software in Microsoft *Access* to facilitate use of the dataset by non modelers.

6. Dominique van der Mensbrugge's assessment of the implications of preference erosion was released in the DECRG/PREM volume on quantifying the value of tariff preferences.

Development Research Group (DECRG)

A series of studies analyzed the implications of the growth of China and India for other regions. Studies completed and/or published this year included the implications for the Middle East and North Africa; for Russia; for Malaysia and for Europe.

The GTAP database was used with the LINKAGE model to assess the implications of changes in global agricultural distortions for key outcomes, especially in agriculture, in developing countries, and the implications of global agricultural trade reform. Key results will be forthcoming in a series of books edited by Kym Anderson.

Govinda Timilsina is using the GTAP database in a global CGE model being developed for assessment of potential impacts of large scale expansion of biofuels. This work focuses on implications for food prices/supply, climate change mitigation, land-use change and poverty. He is working with Dominique van der Mensbrugge to incorporate land-use and biofuels modules.

The effects of food price changes on poverty were examined by Maros Ivanic and Will Martin using household level data. GTAP model results were used to assess the effects of commodity price changes on wage rates.

A study of the implications of reducing energy subsidies in Middle East, and/or improving energy use efficiency in these economies, was completed by Maros Ivanic and Will Martin.

Work on providing improved analytical tariff data is being initiated in collaboration with David Laborde at IFPRI.

Maros Ivanic presented the GTAP database and course in a modeling exercise to an audience including non-modelers.

Poverty Reduction and Economic Management Network (PREM)

A draft volume on dynamic modeling using GTAP was prepared by Elena Ianchovichina and Terrie Walmsley.

Several studies of the implications of the growth of China and India were completed by Elena Ianchovichina working in collaboration with DECRG.

Some Publications and Papers

- Anderson, K. (ed.), *Distortions to Agricultural Incentives: A Global Perspective, 1955 to 2007*, London: Palgrave Macmillan and Washington DC: World Bank, autumn 2009
- Hoekman, B., Martin, W. and Braga, C. eds (2009), *Trade Preference Erosion: Measurement and Policy Response*, Palgrave-MacMillan and the World Bank, New York and Washington DC.
- Ianchovichina, E., Ivanic, M. and Martin, W. (2009), 'Implications of the Growth of China and India for the Middle East' *Middle East Development Journal* 1(1):
- Ianchovichina, E., Ivanic, M. and Martin, W. (2009), 'Implications of the growth of China and India for the other Asian giant: Russia' Accepted for publication in forthcoming book edited by Linda Yueh of Oxford University, 1 January 2009.
- Ivanic, M. and Martin, W. (2008), 'Implications of higher global food prices for poverty in low-income countries' *Agricultural Economics* 39:405-16.
- Martin, W., Ianchovichina, E. and Dimaranan, B. (2008), 'Economic development in emerging Asian markets: implications for Europe' *European Review of Agricultural Economics* 35(3) 303–330.