OECD Summary of GTAP activities 2006-07

GTAP board membership is shared between two directorates: environment directorate and the newly formed trade and agriculture directorate. The merger of the former trade directorate with the former food, agriculture and fisheries directorate has brought together two modelling groups that share the same GTAP tool.

In terms of contributions to the GTAP network, Hsin Huang has provided updated PSE estimates of domestic support to agriculture for the version 7 release of the database. Note that this is the last time OECD will be able to directly provide commodity specific PSE data. With the adoption of the new PSE classification scheme, from 2005 onwards commodity specific estimates will only be available for a LIMITED NUMBER OF PROGRAMS. In 2006, the share of PSE budget payments allocated to "single commodity transfers" was less than 10% of the total. This means that more than 90% of the PSE budget payments that are currently used in the GTAP database will be allocated to broader groups of commodities or to all commodities together.

Frank van Tongeren has served as an instructor for the 2006 GTAP short course, and he has organized a plenary session (future of GTAP and an organized thematic session (gravity and GTAP) for the 10th annual conference on global economic analysis.

A report on specific activities follows below:

Trade and agriculture

Ongoing/completed work

In agriculture, last year was a very quiet year in terms of new GTAP analysis. We received additional exposure from the GTAPEM analysis (Agricultural policy and trade reform: Potential effects at global, national and household levels, Paris: OECD publication services, 2006) at several events in which the media were present, notably for the country case studies released in regional capitals for China, South Africa and Brazil, and at joint OECD-WTO-IDB Regional Outreach event held in Buenos Aires last fall.

Work on the **"Impact of China's integration on selected OECD economies, a quantitative assessment"** used the GTAP database in a quantitative study of welfare impacts of China's integration into global goods and services trade using the FTAP model. Some valuable advice on implementing FTAP was provided by Philippa Dee. This study placed special emphasis on China's foreign direct investment policies and inflows. FTAP was chosen given the investment-dominated profile of China's recent growth. The study analysed in detail the impact of China's liberalisation strategies on the terms of trade, trade flows and welfare of the selected countries. The welfare effects and the decomposition of the contributing factors such as allocative effects, terms of trade effects, net capital endowment effects, product variety effects, and net FDI income effects, were explored at both the sectoral and economy-wide level.

For the purpose of this study the FTAP model was adapted in several ways. Firstly, the current analysis is based on a more disaggregated sectoral database than existing studies employing FTAP, permitting a more detailed analysis of both goods and services trade liberalisation. The GTAP 6.1 Interim Release database and a new bilateral capital stocks database assembled in the context of this project are employed in this analysis.

To enable the analysis of services liberalisation through commercial presence, a bilateral capital stock matrix for 2001 was developed. Bilateral FDI stocks at the GTAP sectoral level were estimated from the new OECD FDI database, UNCTAD World Investment Directory, local government sources for China, Hong Kong, China, Russia, Singapore, Chile, Peru, and Brazil, and ASEAN (2004) for Malaysia, Philippines, Thailand and Vietnam. This information allowed construction of a consistent database of bilateral FDI stocks by region and sector following the methodology employed for the construction of previous FTAP databases.
Link to the paper: http://appli1.oecd.org/olis/2006doc.nsf/linkto/td-tc-wp(2006)10-final

A study on **"India's Trade and Growth, Realising the Potential"** considers the evolution of the Indian economy in the context of a baseline scenario that depicts how the world economy might be expected to change over the next 20 years. The baseline is the scenario developed for the Dynamic GTAP model (Walmsley, 2006), which assembles projections on various macroeconomic aggregates in 92 regions over the period 2001-2020.

The baseline portrays the evolution of India's economy as investment and total factor productivity-driven growth; these two contribute close to 80% to this country's cumulated income growth. Consequently, the contribution of changes in the labour market seems limited but there is a significant change in the structure of labour with skilled workers accounting for ever increasing share in India's labour pool. Additionally, India's already enormous labour force is predicted to grow at rates exceeding those in other BRICs. This strengthens India's position in the world economy as a democratic labour-abundant economy which attaches particular importance to skills and innovation. Hence, the importance of India's labour market may be higher than that suggested by a simple growth decomposition.

The portrayed decomposition of India's growth suggests an expansion that is concentrated in the capital-intensive sectors with high productivity growth that are relatively more reliant on skilled labour. This suggests a primarily manufacturing-sector-driven growth where competitiveness is achieved with the use of ever more abundant skilled labour, presumably through innovation not imitation. Prospects for India's services trade performance are also bright given their relatively high reliance on skilled labour and capital.

The paper addresses trade, structural and policy implications for India that associated with the baseline. This paper is being revised and should be available to the wider public in autumn 2007.

Work on **"South-South Trade"** used the GTAP model and gravity estimations. The gravity methodology is applied to an investigation of causal relationships underlying the historical trade flows. The second part of the paper presents a forward-looking computable general equilibrium simulation of welfare effects associated with a multilateral trade liberalisation scenario that focuses specifically on gains originating in and accruing to developing countries. The standard static GTAP model with an assumption of perfect competition and full employment is used. Overall, the aggregate results from the CGE analysis suggest that, from a development point of view, South-South liberalisation is at least as important as tariff-free market access to Northern markets.
Link to the paper: http://appli1.oecd.org/olis/2006doc.nsf/linkto/td-tc(2006)8-final

Planned work 2007/08
New work on non-tariff measures in agri-food trade is planned for 2007/08. Although it is premature to include the findings in a fully fledged CGE analysis, we might use GTAPEM at later stages for a broader economic assessment.

Model development on GTAPEM continues. The GTAPEM is a specially tailored version of GTAP that inherits some of the features of GTAP-AGR and fully utilizes the domestic support data (PSE) available at the OECD. Further development work has concentrated on improving the import specification, in particular the small shares problem associated with Armington models. This work has been started in collaboration with LEI (The Netherlands) and was presented at the 2006 GTAP conference as well as to OECD working parties. Further work is planned to improve the econometric specification that underlies the gravity estimates for trade shares.

Environment:

Ongoing/completed work

The OECD Environmental Outlook will include a number of analyses that are model-based. Envlinkages (GTAP-based) has been coupled with IMAGE from the Netherlands. The studies to be included in the Outlook are:

- Development of a baseline and keyvariants that are based on sectoral productivity growth and population growth projected over the next 25 years.
- Fisheries: a study of a 25% reduction in global capture fisheries to bring the industry into "sustainability. The reduction is accomplished using a tradable quota system.
- Iron and Steel: a study of changes in pollutant emissions (eg. NOx, SOx and CO2 in response to the imposition of a carbon tax (on all sectors, versus on Iron and Steel only). The policy is implemented on OECD countries only.
- Agriculture and biodiversity: changes in tariffs and subsidies are analysed for their impacts on land use so that some patterns can be discerned concerning biodiversity and other environmental impacts
- Climate change: sectoral implications of achieving a path of CO2 emissions that stabilise GHG concentrations at 450ppm. The policy assumes that all countries participate and that marginal costs are everywhere made equal.

Planned work 2007/08
A Quantitative Analysis of the Costs of Policies/Policy Mixes to Address Climate Change Mitigation post-2012. A joint project between the Environment Directorate and the Economics Policy Committee is proposed for 2007-2008 to examine the environmental and economic costs/benefits of different combinations of policy instruments and different combinations of country commitments to address climate change mitigation post-2012. It is expected that this analysis will provide essential information for OECD countries in negotiations in the UNFCCC process during late 2008.

Following up on the Stern Review, new work will discuss both direct costs associated with different types of climate change risks (market, non-market, taking into account mean change as well as shifts in extremes, and catastrophic/abrupt change impacts) and also indirect macro-economic costs. Many of the estimates found in the literature only cover monetize costs associated with market impacts and omit or significantly constrain other costs associated with climate change, i.e. non-market impacts, extreme events and abrupt change. Indirect (macroeconomic) costs of climate change are only recently the subject of study, but available studies suggest that they may be significant. The range of current estimates of social cost of

carbon (SCC) vary by 2-3 orders of magnitude, from slightly negative to four hundred dollars per tonne of carbon. The recent scientific outlook for climate change provides best estimates of climate sensitivity of 3 C and likely range of 2-4.5 C, yet most of the SCC estimates in the literature do not address climate change at higher levels of change (e.g. 3 C and above).

Efficient dynamic adjustment calls for an agreement that provides clear and credible long-term signals to private sector decision makers. The work will discuss and analyse the implications of this requirement for the choice of instruments and the time-path of environmental objectives. Wide country coverage requires a sufficient set of incentives for various countries to join an agreement which will depend on the benefits and the costs they may incur. The work will focus on a limited number of major players and would aim to provide evidence on their incentives to participate. Among the ancillary benefits (or costs) of joining an agreement which OECD countries may wish to take into account not just for their own part but also in considering necessary concessions for others to join are those related to energy security. An analysis of long-term energy supply would aim to draw out the implications of climate policies for energy supply broken down on types of energy and, where possible, regions of supply.