

The GTAP Advisory Board Meeting, April 2000
CPB, The Hague, The Netherlands

GTAP activities of The CPB

Author: Arjan Lejour

In this note I describe our main activities and research projects in 1999 and the first months in 2000. Second, I attach a list with papers based on GTAP data which are published or presented.

activities

1999 was a very productive year for the division [International Economic Analysis of CPB](#). First of all we have published the description of our dynamic AGE model WorldScan, see CPB (1999). The first part of the publication discusses the main mechanisms of WorldScan and its theoretical foundations and properties. It further documents our calibration procedure and the data needed for calibration. Here we also describe the way in which we use the GTAP data. Finally, WorldScan's mechanisms are illustrated by simulations within a globalization scenario. Applications demonstrate that the model can be used to construct scenarios, to analyse events like ageing and globalization, and to analyse trade and climate-change policies.

Second, we have organised an IPCC expert meeting in The Hague. This meeting is a part of the process of writing a new assessment report on climate change. During this meeting simulation studies were presented which draw on the GTAP data base, see IPCC (1999). Moreover, the organisation of this workshop strengthened our position in the network of international climate change research, in particular the Economic Modelling Forum (EMF).

research

Climate change

An important research topic is the economic analysis of climate-change policies. In this area we work intensively together with RIVM (National Institute of Public Health and Environment).

Carbon leakage that is to say the increase in CO₂ emissions in non Annex 1 countries as a consequence to CO₂ abatement policies in the Annex 1 countries was a prominent theme on our research agenda last year. We have analysed the determinants of carbon leakage in various papers. Carbon leaks to developing countries for at least two reasons. First, energy-intensive industries reallocate to these countries because energy is cheaper there. Second, production processes become more energy intensive in the developing countries because of lower energy prices.

The work covers also other aspects of climate change policies often carried out under the heading of IPCC and EMF). One aspect is the development of so called stabilisation scenarios. These are aimed at a certain concentration levels of CO₂ gasses in 2100. Now the scenarios are developed and quantified, we want to analyse the economic impact of stabilisation and the timing of climate-change policies in these scenarios.

A new topic is the relation between technology and climate-change policies. We participate in the new EMF round (EMF 19) in this area as well as in EMF 18 on

"International Trade Dimensions of Climate Change Policies".

Research and development

Research and development (R&D) raises not only the own technology levels, but also that in other sectors and abroad. We have examined the trade-related diffusion of R&D in three steps. First, using OECD and UNESCO data we provide an overview of global R&D expenditures. Second, we estimate the relation between sectoral R&D expenditures and growth. Finally, these R&D linkages are incorporated in WorldScan. We simulate trade liberalisation and analyse the effects on GDP in different regions. We find that the GDP effects of trade liberalisation are magnified considerably for some regions - - notably Japan and South-East Asia - - where for others - - for example China and Sub-Saharan Africa - - the GDP effects are not increased at all. These findings can be traced back to changing specialization patterns and changing import patterns. A region either specialises in R&D-intensive sectors or imports R&D-intensive goods. Some regions import the knowledge-intensive goods from knowledge-poor regions. Such a >double unfortunate= trade and production pattern explains the results for Sub-Saharan Africa and China.

schooling and ageing

Last year we have developed an extensive population model including labour market participation and schooling. It is a detailed model in which schooling efforts can be analysed for each age cohort. This enables us to analyse the development of human capital formation quite precisely. We will use these results this year to analyse the impact of schooling policies in order to reduce the burden of ageing.

trade in services and WTO

In a collaborative project with the Chinese Academy of Social Sciences we have examined the effects of China=s accession to the WTO on its sectoral structure and on the main trading partners. Now we want to analyse trade in services into more detail. We want to focus on trade in services between OECD and non-OECD countries. First we will analyse current tendencies in trade and its barriers. Later on we will focus on future prospects of the development of trade in services.

publications

I also mention papers from 1998 onwards for inclusion in the list GTAP applications.

Bollen, J.C. and A.M. Gielen (1998), "Economic Impacts of Multilateral Emission Reduction Policies," in C. Carraro (Ed.) *International Environmental Agreements*, Amsterdam Kluwer Academic Press, Amsterdam, 1998.

Bollen, J.C. and A.M. Gielen (1998), Economic Impacts of Multilateral Emission Reduction Policies, *Nota di lavoro 20.98, Fondazione Eni Enrico Mattei*.

Bollen, J.C. Gielen, A.M. and Timmer, H.R. (1998), "Compliance with the Kyoto Protocol," in: *OECD Working Paper* on proceedings of the Workshop "Climate Change and Economic modelling, Background Analysis for the Kyoto Protocol", Paris.

Bollen, J., A. Gielen and H. Timmer (1998), "Ceilings, Clubs and CDM: Some macroeconomics of flexibility in the Kyoto Protocol," *Change*, 44, Oct.-Nov.

Bollen, J.C., A.M. Gielen and H.R. Timmer (1999), "Ceilings, Clubs and CDM," *Energy Journal*, special issue, p. 177-206.

Bollen, J.C., A. Manders and H.R. Timmer (1999), "Kyoto and Carbon Leakage," in *IPCC (1999)*.

Bollen, J.C., A. Manders and H.R. Timmer (1999), "The IPCC SRES stabilisation scenarios," in *IPCC (1999)*.

Bollen, J.C., A. Manders and H.R. Timmer (2000, forthcoming), "The benefits and costs of waiting - early action versus delayed response in the post-SRES stabilisation scenarios." *Environmental Economics and Policy Studies*,

CPB (1999), "Globalization, International Transport and the Global Environment: four quantitative scenarios." Working Paper No 110, CPB, The Hague.
http://www.cpb.nl/eng/pub/pubs/werkdoc_110/

CPB (1999), WorldScan: the Core model, The Hague.
http://www.cpb.nl/eng/pub/pubs/bijzonder_20/

Intergovernmental Panel on Climate Change (IPCC), "Economic impact of mitigation measures." Proceedings of Intergovernmental Panel on Climate Change; Working Group III, The Hague, 27-28 May, 1999, edited by J. Pan, N. van Leeuwen, H. Timmer and R. Swart,
http://www.cpb.nl/eng/pub/pubs/bijzonder_21/

Leeuwen, N. van (1999), "Protection Data for China." Paper presented at the *CPB/CASS workshop on Long Term Scenario Studies of China and the World Economy, Kunming, October*.

Leeuwen, N. van and H. Timmer (1999), "Labour splits in GTAP." CPB interne notitie

99/IV/05, presented at second annual GTAP conference in Assens (Denmark).

Lejour, A. (1999), "The Interplay between Globalization and Environmental Objectives." Paper presented at the Second Annual Conference on Global Economic Analysis, Assens - Denmark, June 1999. http://www.cpb.nl/eng/general/org/homepages/aml/glob_environ3.pdf

Lejour (2000), "China and the WTO: the impact of China's accession on the world economy." Paper presented at CPB/CASS workshop on Long Term Scenario Studies of China and the World Economy, Kunming, 1999, DESG conference on WTO and the developing countries in Nottingham, 2000, and at the third annual GTAP conference in Australia. .
http://www.cpb.nl/eng/general/org/homepages/aml/china_wto.pdf

Lejour, A., and A. Manders (1999), How carbon proof is Kyoto, CPB report 99/4, p. 43-47. .
http://www.cpb.nl/eng/pub/cpbreport/1999_4/s3_2.html

Lejour, A. and R. Nahuis (2000), "Openness, Growth and R&D spillovers: Uncovering the missing link?," paper will be presented at third annual GTAP conference in Melbourne.

Lejour, A., G. van Steen, and H. Timmer (2000), "Endogenous comparative advantages in developing economies," *De Economist*.
http://www.cpb.nl/eng/general/org/homepages/aml/final_2.pdf

Lejour, A., and P. Tang (1999), "The informal sector: a source of growth," CPB Research Memorandum 153. *Also presented at first annual GTAP conference in Purdue, 1998.*
http://www.cpb.nl/eng/pub/pubs/onderzoek_153/om153.pdf

Lejour, A., and P. Tang (2000), "The differential impact of the South on wage inequality on the North," CPB Research Memorandum forthcoming, also presented at the World Congress of the International Economic Association in Buenos Aires, 1999.
http://www.cpb.nl/eng/general/org/homepages/aml/iea_2.pdf

Nahuis, R. (1999), "Global Integration and Wages in a General Equilibrium World Model: Contributions of WorldScan," in: Brenton, P. and Pelkmans, J. *Global Trade and European Workers* (1999), MacMillan Press.

Tang P. (2000, forthcoming), "Emerging markets and wage inequality," proceedings of OECD/CEPR symposium *Globalisation and employment patterns: Policy, theory and evidence*.

Tang P., R. de Mooij and R. Nahuis (1998), "An economic evaluation of alternative approaches for limiting the costs of unilateral regional action to slow down global climate change," *European Economy*, No. 1.