



The Global Trade Analysis Project: Report, Issues and Future Directions

**Compiled by
Terrie Walmsley**

**With contributions from Angel Aguiar, Meghan Alexander,
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Narayanan**

**Center for Global Trade Analysis
Purdue University**

**Background Paper for the GTAP Advisory Board Meeting
Santiago, Chile
June 8-9, 2009**

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List of Supplementary Materials available on the GTAP Website

(https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2009/)

Agency Reports

Graduate Student CVs

Annual Report on I-O tables

Future Directions for TASTE: Tariff Analytical and Simulation Tool for Economists
(David Laborde and Mark Horridge)

Report on splitting labor by skill for version 8 (Marinos Tsigas and Alison Weingarden)

GTAP Website Report

Report on GTAP Usage

Research Fellows CVs

2010 Conference Proposal

2011 Conference Proposal

PURDUE

UNIVERSITY

CENTER FOR GLOBAL TRADE ANALYSIS

July 10, 2009

Dear Board Members,

This was a very successful year for the Center with the public release of the GTAP 7 Data Base. This final release included 113 countries/regions, and substantial improvements in the energy data, and thanks to the CPB, in the services trade data. At the board meeting, Robert McDougall will present what was done to the services trade data in the GTAP 7 Data Base at the board meeting. The special GTAP Africa Data Base was also released to the public in December, 2008.

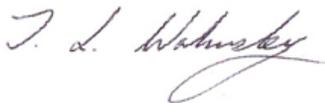
We are already preparing for the next interim release (v7.1) which will include the new European I-O tables provided by Marc Mueller from JRC-IPTS in Spain, as well as improvements in the cotton support subsidies, the EU macro data and income taxes. Preparations for version 8 have also commenced at the Center and with our key collaborators around the world. The USITC staff are already well underway in developing a very promising set of global labor splits by occupation for the v8 data base. We look forward to hearing from Robert Koopman on this at the board meeting. With the recent addition of the International Trade Centre in Geneva to the GTAP Advisory Board, this also provides a good opportunity to discuss future directions in protection data, and implications for version 8. They play a key role, along with UNCTAD and the WTO, in the assembly of global data on bilateral trade and protection. Finally, we anticipate some discussion at the board meeting of the emerging role of GTAP in the debate over Greenhouse Gas Emissions (GHG). Thomas Hertel will make a short presentation on the current state of play with regard to GHG data bases and their use within the GTAP framework.

Similarly to last year, Center staff participated in a one-day retreat to discuss the strategic direction of the Center. Of particular concern were staffing and how the Center should be structured in the future. We look forward to Levent Aydin, from Turkey, joining us in July; and Nico van Leeuwen, from the CPB, visiting us for 6 months in September. While Levent and Nico's arrival will help to overcome our immediate staffing concerns, we are still concerned about our ability to continually attract and retain quality staff. Further in this document we report on these discussions.

We would also like to welcome two new board members, Anders Aeroe from the International Trade Centre in Geneva; and Audrey Lee from the US Department of Energy in Washington DC. We look forward to working with you and your organizations.

As you will see in the following document, the GTAP team has continued to work towards its goals. I hope you enjoy reading what we have done and our thoughts on the year ahead. We look forward to discussing these issues with you at the upcoming GTAP Advisory Board Meeting in Santiago in June.

Yours Sincerely,



Terrie L. Walmsley
Director, Center for Global Trade Analysis
Purdue University

Executive Summary

Background

- GTAP 7 Data Base released to the public in November, 2008. GTAP Africa Data Base released to the public in December, 2008.
- Two new board members, including the ITC Geneva and the US Department of Energy.
- The Center has two staff members commencing full time over the next six months.
- Terrie Walmsley is setting up a base in Australia, from which she will continue to work full-time for GTAP.
- Continued growth and success in research activities in the area of the biofuels and land use.
- Continued high demand for courses, attendance at conferences and interest by potential hosts.

Challenges for the upcoming year

- Work on the GTAP Data Base is currently proceeding along three lines:
 - a) Documentation of the GTAP 7 Data Base, which depends on the efforts of external contributors to document their contributions.
 - b) The construction of the GTAP 7.1 Data Base, which depends greatly on obtaining quality I-O tables for the 27 EU countries.
 - c) The development of a feasible agenda for v8 given data, staffing and time constraints. The two of the key challenges in v.7 were: the energy data and ensuring high quality regional I-O data. In version 8 key challenges will be finding resources to undertake needed improvements to taxes, and domestic margins and I-O table processing.
- To continue to offer the GTAP community state-of-the-art protection data
- Education of users who are unable to come to the GTAP Short Courses, either because of high demand for our courses or insufficient funding
- Our ability to continue to attract and retain quality staff; and related to this is how the Center should be structured given that some staff are choosing to live away from Purdue

Recommended Strategies

- Last year the Center developed a proposed agenda for improvements to the GTAP Data Base to be implemented in versions 8 through 10. This agenda is continuously revised and updated as new issues and/or data sources appear, with staffing changes or offers of external assistance.
 - Levent Aydin will be joining us July and will assist with the energy data.
 - Nico van Leeuwen will be visiting the Center for 6 months and will assist with commodity taxes and domestic margins.
 - Angel Aguiar's will work on improving the regional I-O data, including the implementation of the peer review system.
 - The US ITC is currently assisting with improvements to the skills splits for v8.
- The protection data and a proposal for further improvements to TASTE will be discussed at the board meeting.
- Over the next year, the Center's focus will be on internal staff training. We will also be exploring the use of web-based learning sessions to assist in network building and increasing credibility.
- The Center plans to implement a new strategy, dubbed "Global Purdue", which will enhance our presence worldwide.

GTAP Advisory Board Meeting¹
Santiago, Chile
June 8-9, 2009

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¹ Agency reports are available in the supplementary materials.

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Agenda
Santiago, Chile
June 8-9, 2009

Monday, June 8	
10:00am-11:30am	<p>Welcome and Overview Chair: Thomas Hertel</p> <ul style="list-style-type: none"> • Introductions (15 min) - Thomas Hertel • Overview and Issues (15 min) - Terrie Walmsley <i>Discussion (10 min)</i> • Data Base: Progress and Future Directions (20 min) - Badri Narayanan <i>Discussion (30 min)</i>
11:30am-12:00pm	Coffee Break
12:00pm-1:30pm	<p>GTAP Data Base Issues Chair: Patrick Jomini</p> <ul style="list-style-type: none"> • Services Trade (20 min) - Robert McDougall <i>Discussion (20 min)</i> • Protection Data Discussion (30 min) - Sebastian Jean (CEPII) - Anders Aeroe/Mimouni Mondher (ITC) - David Laborde (IFPRI) - Will Martin (World Bank) <i>Discussion (20 min)</i>
1:30pm-2:30pm	Lunch
2:30pm-4:00pm	<p>Frontiers Issues: Data, Research and Education Chair: Paolo Giordano</p> <ul style="list-style-type: none"> • Skill Shares (15 min) - Robert Koopman <i>Discussion (20 min)</i> • Emissions Data and Research (15 min) - Thomas Hertel <i>Discussion (20 min)</i> • Training and Education: Progress and Future Directions (10 min) - Terrie Walmsley

	<i>Discussion (10 min)</i>
4:00pm-4:30pm	Coffee Break
4:30pm-6:00pm	Discussion of Data Base and Research Issues Chair: Terrie Walmsley
8:00pm	Dinner

Tuesday, June 9	
10:00am-11:30am	<p>The Network Chair: Hans Jensen</p> <ul style="list-style-type: none"> • 2009 Conference Report (10 min) - Carlos de Miguel <i>Discussion (10 min)</i> • 2010 Conference Proposal (10 min) - Mia Mikic <i>Discussion (20 min)</i> • Research Fellows Report (15 min) - Antoine Bouet <i>Discussion (25 min)</i>
11:30am-12:00pm	Coffee Break
12:00pm-1:30pm	<p>Priorities for Forthcoming Year Chair: Thomas Hertel</p> <ul style="list-style-type: none"> • Budget and Staffing (10 min) - Terrie Walmsley <i>Discussion (20 min)</i> • Revisit Priorities for Next Year (20 min) - Terrie Walmsley <i>Discussion (40 min)</i>
1:30pm-2:30pm	Lunch

I. Mission and Goals

Our Mission

To provide leadership in economic policy analysis through better data, fostering collaboration and research.

We value:

- *International Collaboration* because it increases quality of data and analysis.
- *Objectivity and transparency* because they are crucial to our data work and analysis.
- *Discovery* because improving methodology leads to better policy analysis.
- *Learning* because it creates critical vibrancy both within the Center and in the expanding network.
- *Engagement* because it helps us serve policy analysts and decision makers with better data and analysis.

We believe that:

- Better data leads to better policy analysis which leads to better policy.
- Reconciling data makes data better.
- CGE modeling provides useful insights.
- Avoiding duplication in data production is efficient.
- Collaboration enhances individual efforts.
- Having more trained users enriches policy debates.

Our Vision

In 2020, GTAP is an exceptionally vibrant network of global economic policy analysts, with more than 10,000 individuals in 150 countries making contributions. The GTAP Data Base and Models are used in research centers throughout the world, leading to ever greater transparency in global economic analysis. GTAP-based results are influential among decision makers. After 10 years of intensive model validation efforts, GTAP-based models are widely accepted in the professional literature. Indeed, editors of leading journals actively seek out GTAP-based papers on contemporary policy issues.

The GTAP Data Base remains at the core of the Center. National and International agencies actively collaborate with the Center, sending their staff to Purdue to learn and contribute to the GTAP Data Base construction process and hosting GTAP staff. This cooperative arrangement by which the Data Base is now assembled has spawned rapid growth, with active collaborators in more than 100 countries. It is now possible for these agencies to scrutinize the affect of key assumptions on the Data Base and propose modifications to the official GTAP Data Base. Center staff are located around the world in a hub-and-spoke system centered at Purdue University. They collaborate with the network on important global issues, and offer local short courses. The 50 consortium members meet regularly through teleconferences to contribute ideas and to help keep the Center's efforts focused on our vision.

Goals 2008-2012

1. **Data Goal:** To Improve the quality of data products through:
 - Improving the quality of contributed I-O data
 - Addition and improvement of other datasets
 - Monitoring of data quality using comparison programs
 - Version control and documentation
2. **Research Goal:** To actively participate in quantitative economic analysis of pressing global concern in the areas of:
 - Trade and Development and
 - Global Environmental Issues
3. **Model Goal:** To promote further development of GTAP-based models
4. **Education Goal:** To expand and improve global economic analysis education worldwide
5. **Staffing Goal:** To actively seek and encourage talented staff and graduate students
6. **Collaboration Goal:** Actively seek opportunities for fostering collaboration with institutions around the world

II. Center Staff, Research Associates, Graduate Students and Visitors

Center Staff

Angel Aguiar, Research Economist

Angel is a Research Economist, Data Base Construction Specialist, and PhD candidate. Angel is currently extending the Dynamic GTAP Model to account for undocumented workers. His responsibilities include the macro datasets and preparing the energy volume data for the GTAP Data Base.

Meghan Alexander, Program Manager

Meghan oversees the logistics, sales and marketing of GTAP courses, conferences and board meeting; as well as liaising with Board members and Purdue administration. Meghan also oversees the Center's finances.

Ginger Batta, Information Technology Specialist

Ginger oversees the design, development, and maintenance of the GTAP Website and the preparatory web course websites. Outside of this, she is also responsible for the sales, distribution, and reporting of GTAP Products and the online organization of GTAP's core events.

Alla Golub, Research Economist

Alla is collaborating with the Energy Resources Group at UC-Berkeley to analyze the land use impacts of biofuels for the Low Carbon Fuel Standard adopted by California Air Resource Board in April 2009. She also continued to work on climate change mitigation policy with a focus on land-based activities.

Thomas Hertel, Executive Director

Thomas's focus is on strategic issues and new research directions for the Center, as well as Consortium development. He also supervises graduate students and is increasingly involved in a number of environment-related projects at the Center.

Robert McDougall, Deputy Director

Robert works on special projects which significantly improve the GTAP Data Base and Models. This year he has been working on energy data, energy modeling, and the development of programs to compare data bases and ensure quality.

Badri Narayanan, Research Economist and Data Base Construction Specialist

Badri has taken over the management and construction of GTAP Data Base releases, in addition to the GTAP Africa Data Base project. Badri is also working on linking a Partial Equilibrium model with standard GTAP Model for disaggregated analysis.

Wallace Tyner, Senior Policy Advisor

Wally advises the Center on policy. Most recently he has been spearheading a number of large research projects and proposals in the area of energy and biofuels.

Terrie Walmsley, Director

Terrie oversees the day-to-day management of the Center as well as the GTAP Short Courses and board meetings. Terrie also assists Badri with the Data Base and I-O tables. She also supervises graduate students and undertakes research on the Dynamic GTAP Model and labor migration.

Research Associates

Roman Keeney, Faculty Research Associate

Roman is an Assistant Professor with the Department of Economics and associate of the Center. He works on agricultural issues such as land use and biofuels.

Farzad Taheripour, Research Economist

Farzad is developing data and models to introduce biofuels into the GTAP framework and link the GTAP Model with water and energy models. He works on emissions due land use changes associated to biofuels as well.

Graduate students (country of origin)²

Misak Avetisyan (Armenia)

Misak is a PhD student in the Department of Economics. Currently, Misak is working on the Greenhouse Gas impacts of international trade.

Dileep Birur (India)

Dileep is a PhD student in the Department of Agricultural Economics. He is working on impact of global biofuel policies on land-use change and greenhouse gas emissions.

Csilla Lakatos (Romania)

Csilla is a PhD student in the Department of Agricultural Economics. Csilla is working on incorporating bilateral foreign investment into the dynamic GTAP Model. Csilla has also been assisting I-O table contributors with their data.

Tasneem Mirza (Bangladesh)

Tasneem is a PhD student in the Economics Department. She has been involved in modeling trade facilitation, developing web course materials, and calibration of AIDADS. She has also collaborated with the Asian Development Bank (ADB) on Trade Facilitation in South Asian Economic Integration.

Monika Verma (India)

Monika is a PhD student in the Department of Agricultural Economic. She is investigating the impacts of international trade on poverty and nutrition.

Nelson Villoria (Venezuela)

Nelson is a PhD student in the Department of Agricultural Economics. He is using gravity models of international trade to estimate the impacts of China's growth on developing countries. He is also investigating the global land use impacts of regional supply and demand shocks in agriculture.

Other Visitors to the Center

Wolfgang Britz, University of Bonn, Germany, September 2008

Mark Horridge, Monash University, Australia, August 2008

Ken Itakura, Nagoya City University, Japan, October 2008

David Laborde, International Food Policy Research Institute (IFPRI), USA, January 2009

Scott McDonald, Oxford Brookes University, United Kingdom, August 2008

Peter Minor, Nathan Associates, USA, August 2008

Marinos Tsigas, US International Trade Commission (USITC), USA, August 2008 & May 2009

² See supplementary materials for graduate student CVs.

III. Objective and Accomplishments

Progress towards Goals over Past Year

Below is an assessment of our progress towards the core objectives outlined last year in the Board meeting summary

(https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2008/documents/2008_Summary.pdf). For further information on progress see sections IV, V and VI below.

1. *Data Goal:* To Improve the quality of Data Products

<i>Tasks</i>	<i>Individuals</i>
Improving the quality of contributed I-O data (core)	
– Priority: Annual report, Introduction of the Chopping Block, Gather feedback from peer review system, EU I-O Tables	TW, new post-doc
– Secondary priority: Incorporation of Metadata and treatment flags, Introduction of an Alternative I-O contribution format, improved guidance on I-O data contributions, I-O contributor’s course materials on website; Seek reviewers for the peer review system.	RMD, BN, TW, SMD, new post-doc
– Third priority: Alternative I-O contribution format which is based on supply and use format.	TW and new post-doc

Progress:

The Annual Report on I-O tables is available in the board meeting supplementary materials: https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2009/supp_material.asp

The countries listed in the Chopping Bloc have been advertised on GTAP-L and on the website (<https://www.gtap.agecon.purdue.edu/databases/contribute/wanted/choppingblock.asp>). Many of these countries are in Southern Africa. TIPS, South Africa, have also expressed an interest in working with us to update the Southern African I-O tables. They are also interested in hosting a course. We are interested in any potential funding sources for continuing and extending the previous Africa Data and Capacity Building project which concluded earlier this year. Our activities in Africa are discussed further below.

The EU SAMs are expected to be received from Marc Mueller from JRC-IPTS in Spain shortly. Once received, Csilla Lakatos and Scott McDonald will need to convert the tables into the GTAP format. Once finalized the EU countries will be included in v7.1. The programs, developed by Scott McDonald, will also be made publicly available for other contributors.

The I-O contributors course materials have been made available on the GTAP Website at https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2850.

Issues continue to be raised, most recently by Betina Dimaranan (IFPRI), Martin Banse (LEI) and David Laborde (IFPRI), about some of the cost and sales structures of commodities, for instance processed rice and sugar. Martin Banse has also worked closely with Marc Mueller on this issue in the EU I-O tables. In the case of rice there is a known concordance issue which will be fixed for v8 (for further details on this issue see https://www.gtap.agecon.purdue.edu/access_board/v7pr_data_issues.asp). We are continuing to work with I-O table contributors to highlight these issues and to revise our disaggregation module to rectify this. At this stage we still prefer not to make wholesale changes to the cost structure of the affected economies.

In addition to reporting data issues with pre-releases on the board member website we have also

included a page on the GTAP Website which lists known issues with the final version of the GTAP 7 Data Base. We hope that this will inform users of known issues and encourage user to report other issues: https://www.gtap.agecon.purdue.edu/databases/v7/v7_data_issues.asp. This page relates to all known issues, not just issues with I-O tables.

The recent hiring of Levent Aydin means that Angel Aguiar will be able to dedicate his time to working on I-O tables from August, 2009. This will assist us in making further progress on I-O tables and the peer review process.

Addition and improvement of other datasets (core)

RMD, TW,
BN, AA

- Priority: bilateral services data and income taxes
- Secondary Priority: Domestic Margins Data, Skill Splits, I-O disaggregation review, and working committee on Agricultural Support in GTAP, Energy prices and funding.
- Third Priority: Taxes, FDI, NTBs

Progress:

In response to some concerns raised by Nico van Leeuwen and the CPB, Robert McDougall made a number of fixes to the services trade in the GTAP Data Base for the final release of the GTAP 7 Data Base.

The USITC have dedicated resources to assisting us with improving the skill splits in the GTAP Data Base. This work is being undertaken by Marinos Tsigas and Alison Weingarden and will be incorporated into the GTAP 8 Data Base. Robert Koopman will summarize progress on this at the Board meeting and the written report will be made available in the supplementary materials as soon as it is available.

In GTAP 7 Data Base, some important improvements were made to OECD agricultural domestic support. Hsin Huang (OECD) contributed data on activity-specific, group-specific and activity-generic domestic support payments based on output and factors for all OECD countries except the EU members. We equalize the domestic support rates across all crop sectors for the EU members. This gives us a better representation of the fact that many of the payments are decoupled. For EU member countries, the data is expected to be contributed by Hans Jensen for GTAP 8 Data Base. Agricultural factor shares have also been updated using more recent literature.

Factor taxes will be revised in v7.1.

The new hire (Levent Aydin) is familiar with energy data and will be working on further improving the energy data; and Nico van Leeuwen will be assisting us with commodity taxes and, with Robert McDougall, starting the long process of extending the GTAP Data Base to include domestic margins.

Csilla Lakatos and Terrie Walmsley are planning to work on the FDI data in July and make it available to board members shortly after that.

Monitoring Data Quality using comparison programs (core)

RMD, BN,
AA

- Priority: Further work on Comparison Programs; Share these programs and their outputs with the broader GTAP community in order to build confidence in data quality.
 - Secondary Priority: Comparing Simulation Results
-

Progress:

Work here has been directed to improving functionality to meet immediate requirements. Versions have been developed to handle arrays of rates (e.g., tax rates), and to handle arrays of dimension rank 2 (as well as the original rank 3). A beginning has been made on a program for solution result comparison.

Versions and Documentation

- Priority: Documentation (core), GTAP Africa Data Base (non-core),
- Secondary priority: Multiple Versions of GTAP Data Base, Version Control, Documentation of Construction Process (core)

BN, TW,
RMD, AA,
TH,
contributors

Progress:

The final GTAP 7 Data Base was released to the public in November 2008. Since pre-release 6, made available in June 2008, improvements were made to the services trade data and to the agricultural protection data, as well as to the country data.

Documentation is progressing well thanks to the efforts of Badri Narayanan. We hope to have most of the documentation finalized before the board meeting. The documentation can be found at: https://www.gtap.agecon.purdue.edu/databases/v7/v7_doco.asp. As discussed at the previous board meeting an abridged version of the documentation was distributed with the GTAP Data Base CD.

The African GTAP Data Base was also released to the public in December 2008 and can be downloaded from <https://www.gtap.agecon.purdue.edu/databases/Africa/default.asp>. The Center received funding from the Bank Netherlands Partnership Program (BNPP) via the World Bank and the European Commission to further disaggregate the African continent in GTAP. This special version based on GTAP 6 Data Base and includes data for 39 regions (30 African regions and 9 other aggregated regions) and the 57 sectors of the GTAP 6 Data Base.

Open Sourcing

- Secondary Priority: Recirculate NSF proposal on open sourcing of the GTAP Data Base (non-core)

TH, RM, TW

Progress:

The NSF proposal was re-circulated. The response from Board members on this issue was very limited, and we do not currently have prospects for the funding required to make this happen. This was also a topic of discussion at the annual strategic meeting in March 2009 (discussed below). For the time being, we plan to proceed incrementally, while retaining the grand long term vision of an open source data base. Specifically, we plan to share with board members and key contributors certain later-stage modules which would help the relevant contributors to understand what we do and better tailor their work to our data base system.

2. **Research Goal:** To actively participate in quantitative economic analysis of pressing global concern

<i>Tasks</i>	<i>Individuals</i>
Trade and Development <ul style="list-style-type: none"> – Priority: Dynamic GTAP Model (core), poverty module (core) and model linking (non-core) – Secondary priority: Labor migration and FDI (non-core) 	TW, BN, RMD, AA, TH, Graduate students

Progress:

The Dynamic GTAP Model book has been finalized and is on its way to the publisher. Terrie Walmsley is also working on an improved baseline for the GDyn Model; and with Csilla Lakatos, incorporating bilateral investment. These papers will be presented at the conference in Chile.

On labor migration, Terrie Walmsley has been working with the World Bank on a time series bilateral migration data base by gender. Also Angel Aguiar and Terrie Walmsley are working on incorporating the migration model into the GDyn Model.

Badri Narayanan is working with Terrie Walmsley on analyzing the impacts of labor standards on international trade, and in particular, on child labor. This involves extensions to both the standard GTAP 7 Data Base and Model.

Thomas Hertel is presently working with Maros Ivanic, Ana Rios and Monika Verma to finalize a GTAP technical paper documenting the GTAP poverty module and the methodology for extending it to additional regions.

Global Energy and Environmental issues <ul style="list-style-type: none"> – Priority: publish set of papers on biofuels and land-use issues (non-core) – Secondary priority: make underlying data sets publicly available and use funding to improve energy data in the GTAP Data Base (core) 	TH, WT, AG and graduate students
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Progress:

Perhaps the most significant development on this front was the adoption of GTAP as the preferred tool for assessing the indirect land use impacts of biofuels expansion on Greenhouse Gas emissions by the California Air Resources Board: <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm>. Specifically, a modified version of the GTAP Model is used evaluate the emissions resulting from land use change when biofuels production from a given feedstock is expanded.

A series of papers documenting the Center's research in the area of biofuels are now under review or forthcoming in a variety of journals. Working paper versions of these papers are also available on the GTAP Website. This includes a GTAP Technical Paper (Birur, Hertel and Tyner) documenting the basic approach to modeling biofuels within the GTAP framework, as well as a GTAP Research Memorandum showing how the biofuels-extended GTAP Data Base has been constructed (Taheripour et al.).

There is now an edited volume on global land use and climate policy (Hertel, Rose and Tol, eds.) recently been published by Routledge Press in the UK. This documents the data bases and

methodologies underlying recent GTAP-based work on land use and climate policy. In addition, the volume includes state of the art applications by other research groups around the world, including those working in this area at LEI, MIT, University of Maryland, USDA, ESRI and FEEM. The associated data bases are now available on the GTAP Website.

The Center has also been investing in improved Greenhouse Gas Emissions data bases, a CO2 emissions data base for v.7 (2004 base) is available on the website. We have also been revising the non-CO2 emissions data for 2001. The latter will also be updated (rescaled) to 2004 to be compatible with the v.7 data base. There will be a presentation at the GTAP board meeting on the GHG emissions data and their recent uses in GTAP-based policy analysis.

3. **Model Goal:** To promote further development of GTAP-based models

<i>Tasks</i>	<i>Individuals</i>
Actively seek out potential papers for the GTAP Technical Papers (core)	
– Priority: seek out technical papers on issues of relevance to improving the theory of the GTAP Model	TH, TW
– Secondary priority: GTAP-E Model	RMD, AG

Progress:

We are now actively seeing technical papers. For a list of topics see the website: https://www.gtap.agecon.purdue.edu/resources/tech_papers.asp. We are also requesting that models bearing the ‘GTAP’ in their name should be documented through the GTAP Technical Paper Series and be made publicly available to the GTAP Network, since the GTAP name does suggest that they are peer-reviewed, fully documented and publicly available.

Progress has also been made by Alla Golub and Robert McDougall on improving the GTAP-E Model. The new model is available in a research memorandum at: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2959. Progress has also been made on the data, with the development of a revised FlexAgg program, based on the GTAP 6 Data Base, which allows users of the GTAP-E Model to construct their own aggregations. New parameter estimates from Jayson Beckman and Thomas Hertel were also incorporated into this FlexAgg program. Information on developments in energy have been made available on the Energy research website: <https://www.gtap.agecon.purdue.edu/models/energy/default.asp>.

4. **Education Goal:** To expand and improve global economic analysis education worldwide

<i>Tasks</i>	<i>Individuals</i>
Make short course materials more widely available to public (core)	TW, GB, MA
– Priority: look for overseas hosts, hold course (Thailand)	
– Secondary: investigate potential sources of funding for a course for users, look for potential instructors with language skills	

Progress:

The Center will hold the annual course in Thailand in August. We are also in discussions with Hans Jensen (FOI) for a course in Denmark and with Russell Cooper (Macquarie University) in Australia. The UNECA (Ethiopia) and Turkey have also expressed an interest in hosting courses.

The Center held a ‘Live session’ for new users of the GTAP Data Base to ask questions. Despite a few technical difficulties, feedback was very positive. To assist new users we have also included a number of presentations on the GTAP Data Base on the website:

<https://www.gtap.agecon.purdue.edu/databases/v7/default.asp>.

At the live data base session there were also a lot of questions on modeling, highlighting the need for more information on the programs for new users. As a result a new presentation on RunGTAP has also been included on the website.

(<https://www.gtap.agecon.purdue.edu/products/rungtap/default.asp>).

We are also exploring the possibility of holding periodic ‘webinars’ on specialized topics relating to the GTAP Data Base and Models. These would not be live sessions, rather they would be asynchronous with interactions handled through a threaded discussion list.

The Center will also be holding a Data Base session prior to the conference for those interested in hearing more about the GTAP 7 Data Base. This session is being organized by Badri Narayanan.

5. **Staffing Goal:** To actively seek and encourage talented staff and graduate students

<i>Tasks</i>	<i>Individuals</i>
Seek a new person to assist with data base work (core) <ul style="list-style-type: none">– Priority: I-O Tables– Secondary: Energy and Taxes	TW, TH, MA, GB

Progress:

Levent Aydin recently accepted a two year appointment with the Center and will be starting in July, 2009. Levent has long experience with the energy industry, and visited Purdue University for half a year in 2008 as a post-doctoral fellow. He will bring valuable experience working on energy issues arising in construction of the GTAP Data Base. This has been an area of significant growth over the last few years and this growth is expected to continue.

Angel Aguiar joined the Center as a part-time staff member last year and has contributed significantly to the energy data in the GTAP 7 Data Base. Later this year he will finish his PhD, and will then be able to devote his time to coordinating the contribution of I-O tables to the GTAP Data Base.

Nico van Leeuwen will also be visiting us for a period of 6 months, commencing in September. Nico will assist with commodity taxes and domestic margins. We would like to encourage members of the board to visit the Center to give a presentation or stay for longer periods to assist with areas of concern in the data base.

6. **Collaboration Goal:** Actively seek opportunities for fostering collaboration with institutions around the world

<i>Tasks</i>	<i>Individuals</i>
Seek partners and funding opportunities for collaboration (core) – Priority: Consortium institutions and EU partners (core)	TW, TH, MA, GB

Progress:

In September of 2009, the Center hosted Wolfgang Britz of Bonn University. Wolfgang is the primary developer behind the CAPRI Model of EU agriculture which is now widely used by the EU Commission. He presented results pertaining to the disaggregated environmental impacts of EU policies. During the course of his visit, Wolfgang and Thomas Hertel discussed potential collaboration between CAPRI and GTAP, and subsequently are writing a paper on the environmental impacts of EU biofuels programs. The model used for this analysis nests the agricultural supply side from CAPRI (225 regional programming models of agricultural resource use) in the broader GTAP framework. This results in a more accurate assessment of the global land and emissions impacts of EU biofuels programs, while also permitting global results to be fed back into CAPRI to elicit the disaggregated impacts within the EU. Once published, it is hoped that others will build on this work – not only in the EU, but potentially in other regions where detailed supply side representations are available.

Review of Center’s Annual Strategic Meeting

The Center now holds a one-day meeting for all staff members each year. This year’s meeting was held on March 4, 2009. This year, in light of lingering concerns about staffing, the focus was on our vision and how the Center should operate in light of the challenges of obtaining and retaining staff. The key areas discussed at the meeting were:

- I. How should the Center be structured?
- II. The Open Source Vision
- III. Staffing Issues
- IV. Internal and External Education

I. How should the Center be structured?

Three scenarios (outlined in Appendix 2) were used to initiate discussion on how the Center might be structured. Several ideas came out of this discussion:

- Purdue and the Department of Agricultural Economics provide an ideal home for the Center.
- There are benefits of having Center staff located together at Purdue in terms of collaboration.
- However, finding and keeping good staff at Purdue is a challenge in today’s global labor market, with intense competition for scarce talent and expertise.
- In addition to staffing, there are potential benefits from having staff located abroad including: (a) greater interaction and responsiveness to board and network members in the region, and (b) creating opportunities for hosting courses and assisting conference hosts.

- Of course the challenge with this hub-and-spoke system is that the more spokes (i.e., staff located abroad) the more difficult will be coordination and management. There are clearly limits to the extent of such expansion.

The resulting plan, dubbed *Global Purdue*, expands the vision of the Center to enhance our presence worldwide. There are two dimensions to Global Purdue:

- Strategically seek growth opportunities by placing people within supportive team environments in key regions, where they can:
 - support and encourage regional activities through courses, conferences and seminars in the region, interacting with current and potential board members and working with network members in general.
 - undertake data and research projects jointly with board and network members that promise to feed back to the core GTAP mission.
- Tactically, the Center needs to become more open (flexible) to having employees working from a remote location to help in retaining good people.

Opportunities will need to be examined on a case by case basis, taking into account financing, staffing and long term growth potential.

II. The Open Source Vision

An important part of the Center's vision is making the GTAP Data Base and/or programs open source. Appendix 3 provides a review of the issues and thoughts related to open source. The Center staff felt that while open source represents a worthy objective, there are issues which suggest a gradual and considered approach. In light of this we plan to begin sharing with board members or key contributors certain later-stage modules of the GTAP Data Base construction programs which would help the relevant contributors to understand and improve upon what we do.

III. Staffing

Staffing was an important issue discussed at the meeting. Two issues in particular arose: first, establishing a long term plan by which we can recruit and replace staff to meet longer term needs; and second, consideration of the issues related to having staff located outside of Purdue.

Although we have recently overcome most of our current staffing concerns, the Center feels it is important that we continue to examine ways in which to identify and train potential staff members and external contributors, and retain trained graduate students in the future. The current obstacles to the Center in obtaining and retaining quality staff include:

- Many newly minted PhD's have a strong theoretical orientation but may have little/no data experience.
- The Center needs to be able to offer competitive wages and a clear career path for employees.
- Many of the top individuals in this field are also highly immobile.

Action plan:

- Our ultimate aim is to have a core staff that works 50% on data and 50% on research. Towards this end, we should:
 - Look for more opportunities for those working on the data base to become more engaged in research projects,

- Look for opportunities for more research to be integrated into the core data base and model structure
- Back to office reporting by staff members and better communication to share research opportunities with other staff.
- Examine the possibility of having joint appointments with board member institutions to work on issues of joint interest.
- Look for a part-time undergrad or graduate student from computer science/engineering/math department to trial a non-economist focused on software development.
- Highlight potential career paths of working with the Center: e.g., future work at a board member organization.
- Establish clear criteria for advancing to a Research Faculty position as a means of promotion at Purdue.
- Become more open to allowing staff members to be located elsewhere, subject to certain conditions:
 - Expect that staff member will have spent some time (min 2 years) at Purdue for training purposes.
 - Employees in remote locations would be expected to generate revenues by getting involved on regional research projects. Expect them to cover 50% of salary.
 - Expect them to act as a regional link between board members, network and Center. Participating in courses/training, conferences and research.
 - Must visit Center at Purdue on a regular basis and attend the annual strategic staff meeting.
 - Not automatic. Each case will be decided upon on a case by case basis depending on the costs vs. benefits, which will also depend on the total number of spokes and our ability to manage them.

IV. Internal and External Education

It was generally agreed that the Center's focus should be on training and developing staff, visitors and graduate students. We also discussed ways in which we can interact further with the network through 'webinars', live sessions and GTAP-L. These are discussed in further detail below in Section VI on the model and education.

Proposed Activities over the next year and beyond

The goals and objectives are discussed in detail in sections IV, V and VI below. Here we include a summary of the proposed objectives; based on the five goals established at the strategic planning retreat undertaken in March 2008.

1. **Data Goal:** To Improve the quality of Data Products

<i>Tasks</i>	<i>Individuals</i>
Improving the quality of contributed I-O data (core)	
– Priority: Annual report, EU I-O Tables	TW, AA
– Secondary priority: Incorporation of Metadata and treatment flags, Introduction of an Alternative I-O contribution format, improved guidance on I-O data contributions	RMD, BN, TW, AA
– Tertiary priority: Alternative I-O contribution format which is based on supply and use format	TW, AA
Addition and Improvement of Other Datasets (core)	RMD, TW, BN, LA
– Priority: income taxes, skill splits (with help of USITC)	
– Secondary Priority: domestic margins data, I-O disaggregation review, and working committee on Agricultural Support in GTAP, energy prices and funding	
– Tertiary Priority: Commodity taxes, FDI, NTBs	
Monitoring Data Quality using Comparison Programs (core)	RMD, BN, Grad student
– Priority: Further work on Comparison Programs; Share these programs and their outputs with the broader GTAP community in order to build confidence in data quality	
– Secondary Priority: Comparing Simulation Results across data bases	
Versions and Documentation	
– Priority: Documentation (core), Interim releases (core)	BN, TW, RMD, AA, TH
– Secondary priority: Multiple Versions of GTAP Data Base, Version Control, Documentation of Construction Process (core)	
Open Sourcing	RM, BN
– Secondary Priority: Examine ways in which to circulate some of the later-stage modules to contributors (core)	

2. **Research Goal:** To actively participate in quantitative economic analysis of pressing global concern

<i>Tasks</i>	<i>Individuals</i>
Trade and Development	TW, BN, RMD, AA, Graduate students
– Priority: Dynamic GTAP Model (core), poverty module, and PE-GE model and model linking (non-core)	
– Secondary priority: Labor migration and FDI (non-core)	

Global Energy and Environmental issues	TH, WT, AG, TW and graduate students
<ul style="list-style-type: none"> – Priority: continue to publish papers on biofuels and land-use issues, develop methodologies for incorporating climate change impacts and GHG mitigation opportunities (non-core) – Secondary priority: make underlying data sets publicly available and use funding to improve energy data in the GTAP Data Base (core) 	
<hr/>	
3. Model Goal: To promote further development of GTAP-based models	
<hr/>	
Tasks	Individuals
<hr/>	
Actively seek out potential papers for the GTAP Technical Papers (core)	
<ul style="list-style-type: none"> – Priority: GTAP-E Model – Secondary priority: seek out technical papers on issues of relevance to improving the theory of the GTAP Model 	AL, RMD, AG TW and TH
<hr/>	
4. Education Goal: To expand and improve global economic analysis education worldwide	
<hr/>	
Tasks	Individuals
<hr/>	
Make short course materials more widely available to public (core)	
<ul style="list-style-type: none"> – Priority: hold course (Thailand), hold data base session at conference, hold additional live sessions and/or webinars on specialized data and modelling topics – Secondary: investigate potential sources of funding for a course for users, look for additional instructors (preferably with language skills) 	TW, GB, MA, TM, BN and TH
<hr/>	
5. Staffing Goal: To actively seek and encourage talented staff and graduate students	
<hr/>	
Tasks	Individuals
<hr/>	
Seek a new person to assist with data base work (core)	
<ul style="list-style-type: none"> – Priority: train and retain new staff and graduate students; continue to monitor hub and spoke system. 	TW, TH, RMD
<hr/>	

6. **Collaboration Goal:** Actively seek opportunities for fostering collaboration with institutions around the world

<i>Tasks</i>	<i>Individuals</i>
Seek partners and funding opportunities for collaboration (core) – Priority: Consortium institutions and Europe (core)	TW, TH

IV. The GTAP Data Base and Other Data Projects: Progress and Future Objectives

In this section, we first outline in detail the progress made in the last year with the GTAP 7 Data base, documentation and issues reporting. Second, priorities for future releases related to both the 7.1 interim and version 8 releases are discussed. We also outline and discuss our thoughts on other potential issues which may be of interest to the board, but are not currently on the agenda. Finally, we summarize the situation regarding other data activities being undertaken.

The GTAP 7 Data Base: Review of Progress

A brief overview of the history of the GTAP Data Base is provided on the website:

https://www.gtap.agecon.purdue.edu/about/db_history.asp

In November 2008, the GTAP 7 Data Base was released to the public. The GTAP 7 Data Base is based on a 2004 reference year and has 57 sectors and 113 regions. The following is a summary of changes made since version 6:

- a) 25 new countries have been incorporated since the last public release (GTAP 6 Data Base) and 36 old I-O tables have been updated. The new tables include Pakistan, Bolivia, Ecuador, Iran, Mauritius, Nigeria, Cambodia, Paraguay, Egypt, Senegal, Nicaragua, Kazakhstan, Kyrgyzstan, Armenia, Azerbaijan, Georgia, Ukraine, Belarus, Costa Rica, Guatemala, Lao People's Democratic Republic, Norway, Ethiopia, Panama and Myanmar. Updated data has been obtained for Australia, Chile, Vietnam, United States, Mexico, Bolivia, Colombia, Romania, Canada, Kazakhstan, Ecuador, Paraguay, Russia, Bolivia, Nicaragua, Sri Lanka, Morocco, Peru, Uruguay, Korea, Iran, Austria, Czech Republic, Estonia, Germany, Netherlands, Ireland, Poland, Sweden, UK, Denmark, France, Greece, Spain, Cambodia, Switzerland, South Africa, Philippines, Vietnam, Morocco and Peru. The Center has also made improvements to India and Luxembourg. Further details on the I-O tables can be found in the I-O table report in the supplementary materials.
- b) 2004 bilateral Trade data from Mark Gehlhar at the ERS/USDA.
- c) 2003 bilateral services trade data contributed by the CPB, which has been reconciled with the IMF services trade totals.
- d) 2004 preferential tariffs data from Market Access Maps (MAcMaps) contributed by David Laborde of CEPII, and more recently of IFPRI. Combined data on *ad valorem* tariffs and the *ad valorem* equivalent of specific tariffs is incorporated in the data base.
- e) 2004 domestic support data for OECD in the new format and some non-OECD countries contributed by Hsin Huang of the OECD. The domestic support data are available for the following countries: Australia, Canada, European Union 15, Iceland, Japan, Korea, Mexico, Norway, Switzerland, Turkey, the United States, China, Brazil, South Africa, Russia, Ukraine,

Bulgaria and Romania. A note explaining this is available from the following link: https://www.gtap.agecon.purdue.edu/access_board/documents/domsup.doc

- f) 2004 domestic support data for the individual EU25 member countries contributed by Hans Grinsted Jensen of the FOI. This was further adjusted to equalize the rates of domestic support across the crop sectors. This was done to reflect the fact that most of the payments are decoupled.
- g) Agricultural export subsidy data contributed by Aziz Elbehri of ERS/USDA. The dataset covers agricultural export subsidies as notified to the WTO for 2004 or the closest available year for European Union 25 (2002), Canada (2004), Israel (2003), Morocco (2002), Norway (2001), Panama (2003), Switzerland (2003), Tunisia (2002) and the United States (2002).
- h) Estimates of the export tax equivalents of quotas on textile and wearing apparel exports to Canada, USA and the EU15 under the Agreement on Textiles and Clothing from recent work done by Joe Francois and Julia Wörz. For Canada and the EU15, the ETE estimates are for 2003 and for the USA, the ETE estimates are for 2004.
- i) 2004 macroeconomic aggregates data from the World Bank (Dominique van der Mensbrugge) augmented with data from published sources (World Development Report, CIA Factbook).
- j) 2004 Government expenditure data updated by Angel Aguiar.
- k) Modifications have been made to the value added shares and domestic support in agriculture by Badri Narayanan and Thomas Hertel.

Data Base Documentation

A great deal of the documentation for the GTAP 7 Data Base is already available on the GTAP Website, 18 of the 31 primary chapters have already been posted on the website and another 2 have been received and will be posted shortly. Of the I-O table documentation we are only waiting on documentation for the USA, Europe and Kyrgyzstan. We would like to strongly encourage all board members who supported the contribution of these countries or of other datasets to assist us in obtaining the remaining documentation, as this is a very important part of dissemination of the data base. We hope to have most of the documentation finalized before the board meeting. The documentation can be found at:

https://www.gtap.agecon.purdue.edu/databases/v7/v7_doco.asp.

As discussed at the previous board meeting an abridged version of the documentation was distributed with the GTAP Data Base CD. This was very successful, allowing us to significantly reduce the costs of printing and postage, and allowing us to post basic documentation with the GTAP Data Base programs.

Summary matrices and older versions of the GTAP Data Base

In line with our policy to make older versions available to the public for free, the GTAP 5 Data Base can now be downloaded from the GTAP Website, along with version 4.

<https://www.gtap.agecon.purdue.edu/databases/archives.asp>

Summary data (including SAMs) from the GTAP 7 Data Base have also been made available on the GTAP Website thanks to the efforts of Alexandra Strezski from the Australian Productivity Commission and Tasneem Mirza (Purdue University).

https://www.gtap.agecon.purdue.edu/databases/v7/v7_sampledata.asp

Issue reporting

During the development of the GTAP 7 Data Base, the Center began reporting extensively on all data issues with pre-releases and release candidates on the board member website raised by board members and users. We are very grateful to all those who checked the data and reported issues. This discussion certainly improved the quality of the final GTAP 7 Data Base.

https://www.gtap.agecon.purdue.edu/access_board/data_issues.asp

Most recently we have begun a similar issues list for the publicly released GTAP 7 Data Base. This issues list is available to the network at:

https://www.gtap.agecon.purdue.edu/databases/v7/v7_data_issues.asp.

We hope that this will inform users of known issues, assist them in fixing the issue themselves if required and encourage user to report other issues.

Future GTAP Data Base Releases

GTAP 7.1 Data Base

Within the next few months we hope to have finalized the first interim release of the GTAP 7 Data Base. The following changes will be made in the interim release:

- a) The latest European I-O tables from Marc Mueller will be included. Once received these will need to be adjusted to match the GTAP format by Csilla Lakatos and Scott McDonald.
- b) The factor taxes will be altered to take into account issues raised in the past by Angelo Gurgel, Gilbert Metcalf and John Reilly and outlined in:
https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2118
- c) Removal of Myanmar. As a result of feedback from David Laborde we plan to remove Myanmar from the GTAP 7 Data Base.
- d) Adjustments to the EU macro data.
 - a. Initial comparisons were made between the GTAP macro data and the macro data from the updated EU IO tables which revealed discrepancies. Our primary source for macroeconomic data is the World Bank. The World Bank relies on National Income Account (NIA) data from the OECD for high-income countries. While some of these discrepancies are expected, due to different harmonization procedures of the OECD and EUROSTAT, we were able to confirm that OECD NIA data had been updated. The largest adjustments were made to Hungary, Greece, and Bulgaria.
 - b. During this investigation, we were also able to fill in some missing data for the EU. In version 7, private and government consumption for Belgium, Cyprus, Luxembourg, and Malta were missing and had to be estimated. In version 7.1 we will use the estimates from EUROSTAT provided by Marc Mueller.
- e) Cotton support estimates from OECD to be revised. Gaspar Frontini (European Commission) noted some discrepancies in the computation of US cotton subsidies in GTAP 7 Data Base. Further in-house investigation found that the current level of aggregation at which the OECD domestic support data is being contributed did not allow us to arrive at an accurate figure for cotton subsidies, since the subsidies for GTAP sectors PFB, V_F and OCR were aggregated. In future, OECD expects to give us the subsidies broken up among these three sectors, so that this can be fixed in v7.1.

The GTAP 8 Data Base

In addition to the long list of objectives discussed in the 2008 board issues document (https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2008/documents/2008_IssuesReport.pdf), the following is a list of new issues or issues where some progress has been made in relation to version 8:

Skill shares

In the GTAP 4 Data Base Liu, Jing, Nico van Leeuwen, Tri Thanh Vo, Rod Tyers and Thomas Hertel developed a methodology for splitting labor in value added across skilled and unskilled workers. Marinos Tsigas and Alison Weingarden from the USITC are currently updating the skill shares for the GTAP 8 Data Base. We are very grateful to Robert Koopman and the USITC for providing the resources to improve this data. Robert Koopman will provide us with an update on progress at the board meeting.

EU Domestic Support Data

In GTAP 7 Data Base, activity-specific, activity-generic and group-specific payments were available for all OECD member countries except the EU countries. Hans Jensen is expected to contribute this for GTAP 8 Data Base, with inputs from OECD, for all the EU member countries.

Domestic Margins and I-O Table Processing

We aim to begin the lengthy process of integrating domestic margins data into the GTAP Data Base. First steps are to add margins data in a module inserted at the end of the current construction process, and to develop a protocol for domestic margins data inputs with interested I-O table contributors. In later releases, we would aim progressively to move the introduction of domestic margins data toward the beginning of the I-O table processing chain in the construction process.

This makes it timely to address some longstanding issues with the I-O table processing. Priorities here include revising the I-O table disaggregation module to improve the allocation of non-agricultural inputs between agricultural industries (the previously discussed problem of “fishy rice in China”, to which David Laborde has recently called attention).

Energy

Several improvements to the energy data processing are expected to be made by Levent Aydin during his stint at Purdue starting later this year. Among the issues we hope to address are improved treatment of energy volumes data for difficult categories such as marine bunkers and “non-specified energy sector”, and better integration of the volumes and prices data processing.

Taxes

We have become aware of a number of issues concerning tariffs and commodity taxes. The most important of these is the elimination from the final data base of information in contributed I-O tables on taxes on non-energy inputs into non-agricultural industries. We hope to address these through an overhaul of the relevant modules (final assembly, I-O table fitting, and protection) in the GTAP 8 cycle.

Protection

The ITC Geneva has recently joined the GTAP Advisory Board. With this development, we believe we have all the major players in global tariff analysis on the Board. This should put us in an excellent position to continue to offer the GTAP community state-of-the-art protection data which are fully integrated into the global GTAP Data Base, as well as synchronized with the TASTE software for conducting HS-6 level policy experiments. We will have a special session at the Board meeting devoted to discussion of future directions for this data base and specifically version 8 of GTAP.

Open Sourcing

First steps toward open-sourcing the data base construction program are conversion from the proprietary

build management tool Opus Make to the open-source GNU Make, and release of a few later-stage modules to Consortium members.

Issues not currently on our Agenda

Sector Splits

The issue of further disaggregation of sectors has been raised a number of times in the past. In 1998 with version 4, we disaggregated agriculture adding 13 new sectors; in 2001 with version 5, another 7 service sectors were added. In 2003, we included a question on our strategic planning survey in an attempt to identify other potential sectors where disaggregation would be of interest to the network. The results of this survey suggested that there was no consistent view on what sectors needed to be disaggregated. In 2005, Mark Horridge was commissioned to produce SplitCom, a facility to assist users who wanted to disaggregate commodities. Also since 2005, further work has been undertaken at the Center (by Thomas Hertel, Jason Grant and Badri Narayanan) to link PE models with GTAP to obtain disaggregated results, and we have encouraged (unsuccessfully) a technical paper which would outline how single country CGE models could be linked with the GTAP Model; and another on using SplitCom to disaggregate cotton clothing.

Currently we have several concerns regarding sectoral disaggregation. Our main concern is that there is already a great deal of concern about the quality of I-O tables and in particular the disaggregation of agricultural commodities. Further disaggregation of sectors would very likely result in further quality issues, particularly for the developing countries where data already requires significant in-house disaggregation. It should be noted that between versions 6 and 7 the number of countries requiring disaggregation has increased significantly from 20 of the 87 countries/regions (23%) to 56 of 113 (50%).

In light of these concerns, we feel that sectoral disaggregation should be done only on commodities where there is both a clear demand and good quality international data for disaggregation available. This would be evidenced by the fact that people have undertaken the disaggregation themselves, perhaps using the SplitCom facility.

Other Data Related Activities: Progress and Priorities

Agricultural protection

Alternative Agricultural Price Distortions for Developing Countries from 2004 and 1980-84, developed as a result a recent World Bank Research project have now been provided through a research memorandum, along with the mapping to the GTAP 7 Data Base regions and commodities. The current GTAP version 7 Data Base may be modified to incorporate this dataset, using an Altermat simulation. The files required for this Altermat simulation, including the closure, experiment file, parameter files and shock files are also being provided here. Starting from the original aggregation of 113 regions and 57 sectors, the users can modify the data at the level of aggregation provided (60 regions and 23 sectors.), or any other feasible level of aggregation.

https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2925

Users concerned with the discrepancies in the computation of US cotton subsidies in GTAP 7 Data Base, who cannot wait for v7.1, are advised to perform Altermat simulations to adjust any such rates, by reviewing papers such as Anderson and Valenzuela (2007) that modify the GTAP Data Base to incorporate this difference in domestic support by increasing the power of support to 1.4 as against 1.1 in GTAP Data Base version 6 Data Base. As noted above we hope to fix this in version 7.1.

Future Directions for TASTE: Tariff Analytical and Simulation Tool for Economists

The TASTE program has been a very successful tool in assisting GTAP users to aggregate and prepare tariff shock files. David Laborde and Mark Horridge are currently working on a proposal to extend

TASTE. A proposal will be included in the supplementary materials and circulated prior to the board meeting. The three proposed add-ons include:

1) Sensitive product selection criterion

Include two or three criteria which would allow selection of sensitive products automatically for the user.

2) Additional aggregators

Currently TASTE includes two aggregators: trade weighted and reference group. They propose some additional theoretically based aggregators (such as MTRI, TRI etc.). During the conference Will Martin, Dominique van der Mensbrugge and David Laborde will present a new more sophisticated way to aggregate tariffs that protects tariff revenue (the problem of MTRI and TRI).

3) Information on Tariff Rate Quotas.

Inclusion of information on Tariff Rate Quotas at the tariff line level provides new opportunities for users to handle the TRQ issue.

GTAP Africa Data Base

The GTAP Africa Data Base, based on the GTAP 6 Data Base, was publicly released in December 2008. It includes data for 39 regions (30 African regions and 9 other aggregated regions) and the 57 sectors of the GTAP Data Base. As of April 29, 2009, 102 individuals have downloaded the GTAP Africa Data Base.

<https://www.gtap.agecon.purdue.edu/databases/Africa/default.asp>

We continue to be involved in efforts to improve the African data and are interested in any potential funding sources for continuing and extending the previous Africa Data and Capacity Building project which concluded earlier this year.

In addition, many of the countries in Southern Africa are also on the Chopping Block for potential exclusion from the GTAP Data Base in versions 8 and 9. TIPS, South Africa, have also expressed an interest in working with us to update the Southern African I-O tables. They are also interested in hosting a course.

We are also currently involved in efforts to develop an African modeling network (AGRODEP) and hope to hold a course in conjunction with the UNECA.

Energy Data

There have been a number of new developments in data bases and facilities available or forthcoming related to the energy data, including new CO2 emissions data for v7 from Huey-Lin Lee, biofuels data produced by Farzad Taheripour and a GTAP-E aggregation facility consistent with v6 produced by Terrie Walmsley and Dileep Birur.

<https://www.gtap.agecon.purdue.edu/models/energy/default.asp>

Inter-country distances between all 113 GTAP 7 regions

Links to GAMs and GEMPACK versions of material prepared by Thomas Rutherford showing inter-country distances between all 113 GTAP 7 regions; with short program, produced by Mark Horridge, to compute the distance matrix for an aggregated region set, have been provided at:

https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2924

V. Research: Progress and Future Objectives

Research Goal: To actively participate in quantitative economic analysis of pressing global concern in the areas of: Trade and Development and Global Energy and Environmental issues.

Trade and Development

Trade and development continue to offer important opportunities for the Center in terms of research and data base development. Whenever possible funding is sought for research related projects in trade economic development, however certain tasks, such as the continued development of the Dynamic GTAP Model are considered core. The number of research challenges in the area of trade and development continues to grow. Below are those areas where the Center hopes to continue to influence research.

Investment and Dynamics

With the advent of regular short courses, the Dynamic GTAP Model is increasingly being used amongst network members to examine trade, investment, demographic and environmental issues. The Center also continues to use and further develop the model. Current projects include the inclusion of bilateral foreign income flows into the model to replace the global trust used to allocate saving across foreign investments (Lakatos and Walmsley). This work will be presented by Csilla Lakatos at the Conference in Chile. Terrie Walmsley is also working on developing a new baseline for the GDyn Model, which will be presented at the conference.

Angel Aguiar and Terrie Walmsley have recently developed a dynamic version of the migration model (GMig2-Dyn). In addition considerable work is being undertaken to include land use and GHG emissions in both the static and dynamic models by Misak Avetisyan, Alla Golub, and Thomas Hertel (see also below).

Poverty

Thomas Hertel is presently working with Maros Ivanic, Ana Rios and Monika Verma to finalize a GTAP technical paper documenting the GTAP poverty module and the methodology for extending it to additional regions. It is hoped that this will provide the necessary impetus to extend the poverty module to a meaningful number of developing countries (say 40?) in order to allow researchers to generalize about the poverty impacts of global economic policies.

Model Linking

Badri Narayanan, Thomas Hertel and Mark Horridge, drawing on work done previously by Jason Grant, Thomas Hertel and Thomas Rutherford, have implemented a PE/GE Model within the GTAP modeling framework. The primary advantage of this new work is that it is undertaken in conjunction with the standard GTAP Model, thereby making available to the user all of the decomposition tools that have been developed for this standard model. In particular, they extend the welfare decomposition of Huff and Hertel (2001) to the PE/GE Model in order to investigate the sources of welfare gain in this integrated, trade modeling framework. They illustrate this model with a simulation analyzing the impacts of complete tariff-liberalization on Indian auto industry. The results of this work were presented by Badri at the conference in Helsinki and a technical paper based on this work is in progress.

Migration

Terrie Walmsley is currently working on a number of fronts to further develop the migration model and data base. In addition to incorporating dynamics (with Angel Aguiar), Walmsley is also working with Chris Parsons (and others at World Bank) to obtain time series data on the gender (and eventually the age) of migrants.

Non-Tariff Barriers

Tasneem Mirza, with Thomas Hertel, is examining the impact of improving border logistics through increased trade-related productivity which reduces effective prices and increases trading competitiveness. This work is being presented at the 12th Annual Conference in Chile.

Badri Narayanan is also working on a paper that examines the impact of labor standards on international trade, focusing on child labor, with Terrie Walmsley. This work is still in progress and involves extensions to both the GTAP Data Base and Model.

Global Energy and Environmental issues

From the point of view of the Center's research agenda, "Energy and the Environment" (E&E) refers to research into global environmental issues with significant trade dimensions. Currently this encompasses policies related to climate change as well as biofuels policies. These are broad topics, so the Center's current work agenda is emphasizing the land use and poverty dimensions of these policies. These topics are of increasing importance in global economic policy, as evidenced by the diversion of funding and resources by government and academic institutions towards them. During the Center's 2008 strategic planning retreat, this area of work was highlighted as a new priority area for the Center. However, this work is still in its relative infancy, and there are significant opportunities and challenges ahead where the Center can clearly play the role of a global research leader in analysis of the global land use and poverty impacts of energy, environment and climate issues.

In order to establish the Center as a global research leader in these areas, peer-reviewed publications are essential. Below is a list of papers in this area that have recently emerged from the Center. As can be seen from the list of authors, this work has increasingly been drawing us into inter-disciplinary collaborations with climate scientists, ecologists and geographers.

<i>Title/Objective of paper</i>	<i>Timeline</i>	<i>Authors</i>
Global Impacts of Biofuels	Forthcoming in <i>The Energy Journal</i>	Thomas Hertel, Wally Tyner, and Dileep Birur
The Indirect Land Use Impacts of US Biofuel Policies: The Importance of Acreage, Yield and Bilateral Trade Responses	Forthcoming in the <i>American Journal of Agricultural Economics</i>	Roman Keeney and Thomas Hertel
Biofuels and their Byproducts: Global Economic and Environmental Implications	Under journal review	Farzad Taheripour, Thomas Hertel and Wally Tyner, Jayson Beckman and Dileep Birur
Global livestock impacts of biofuels	Report for FAO	Farzad Taheripour, Thomas Hertel, Wally Tyner
Greenhouse Gas Emissions associated with Biofuels	To be presented at 2009 AAEA meeting	Dileep Birur, Alla Golub, Thomas Hertel, Steven Rose and Brent Sohngen
Analyzing changes in land cover in response to US biofuels	GTAP RM; currently working	Amer Ahmed, Thomas Hertel, Ruben Lubowski

on a journal paper

PE model of cellulosic ethanol	Draft paper	Wally Tyner, Farzad Taheripour
Land use and GHG emissions abatement	Forthcoming in <i>Resource and Energy Economics</i>	Alla Golub, Thomas Hertel, Huey-Lin Lee, Brent Sohngen, Steve Rose
GHG emissions from indirect land use change due to biofuels	Under review	Alla Golub, Thomas Hertel and collaborators from UC Berkeley
Biofuels data base	GTAP Research Memorandum	Farzad Taheripour, Dileep Birur, Wally Tyner
Climate Volatility and Poverty Vulnerability	In process	Amer Ahmed, Noah Diffenbaugh, Thomas Hertel, Navin Ramankutty and Pedram Rowhani
Validating the GTAP-E Model	Under journal review	Jayson Beckman, Thomas Hertel and Wally Tyner
Relative Role of Land in Climate Policy	To be presented at GTAP Conference	Alla Golub, Thomas Hertel, Steven Rose, Brent Sohngen and Misak Avetisyan

VI. The Model, Education and the Network

Model Goal: To promote further development of GTAP-based models

Last year we came up with a list of important topics for potential technical papers in an effort to encourage staff, graduate students and others in the GTAP Network to think about contributing too. Progress on this list is summarized below:

New GTAP-E Model and technical paper (McDougall and Golub)	In progress
Paper validating the GTAP-E Model (Beckman, Hertel and Tyner)	Done
Paper showing how to incorporate firm heterogeneity into the GTAP Model (New Center graduate student and Fan Zhai)	In progress
Modelling EU agricultural policy	No progress
Macro transmission in GTAP and real exchange rates	No progress
Non-tariff barriers – measurement and modeling	No progress

The impact of alternative methods for aggregating protection	No progress
Linking CGE Models to PE Models (Badri Narayanan)	In Progress
Terms of trade and Armington	No progress
What makes a good CGE paper?	No progress
How to change the standard GTAP Model?	No progress

Education Goal: To expand and improve global economic analysis education worldwide

Last year we outlined a proposal for extending our courses and making more education materials available on the website. There were a number of concerns raised by this proposal about making too much material available and thereby reducing the effectiveness of education in CGE Modeling and potentially reducing demand for the courses, which are essentially the best way to obtain a good understanding about the GTAP Models and Data Bases.

Despite this we are still concerned about the large number of untrained and price-sensitive users particularly from developing countries who cannot afford to attend courses, the high demand for GTAP courses and our inability to satisfy that demand.

5 key challenges for GTAP in this area:

- How to satisfy demand for short courses, given limited resources?
- How to help network members gain advanced knowledge on model development and the data base?
- How to cater for and raise the quality of untrained users who cannot afford our courses (or for whom places are unavailable due to supply constraints)?
- How do we educate policy makers in the GTAP Model and Data Base? (low priority)
- How to train visitors, grads and new staff members quickly so they can be more productive? (high priority)

We are currently examining/testing a number of alternatives:

- Internal Training of Staff, graduate students and visitors: Our current priority is the training of new employees and graduate students, through:
 - on-the-job training
 - mentoring
 - internal task documentation (e.g., DB construction process)
 - Advanced ITaP programming courses in UNIX, BASH, PERL.
 - More active GTAP Seminar Series with invited guests.
- For untrained users:
 - We recently conducted a ‘Live web session’ with new GTAP Data Base users. While this was primarily intended to discuss the GTAP 7 Data Base issues, the session also covered topics related to modeling. Despite some technical issues, feedback on this session was very positive. We expect to hold more of these in the future, each focusing on particular aspects of the data base and/or the GTAP Model. These live sessions are

likely to assist in network building and increasing credibility rather than as alternatives to the short course.

- We have also increased the number of audio presentations on the website. A number of presentations have been added to help new users become familiar with the data base and RunGTAP.
- We are also concerned about the lack of response back to the GTAP-list as a whole. We will endeavor to increase traffic on this list and ask that users write back to the list, particularly with regard to non-GTAP specific items which we cannot answer.
- For advanced users:
 - The I-O contributor's course will not be held this year. These courses allowed us to produce a valuable set of materials for I-O table contributors, and all materials have now been made freely available on the GTAP Website. We have not ruled out holding the course again in the future, perhaps with an extended aim, and we do plan to expand the I-O course materials to cover I-O Accounting and the SNA.
 - We are also exploring the possibility of holding periodic 'webinars' on specialized topics relating to the GTAP Data Base and Models. These would not be live sessions, rather they would be asynchronous with interactions handled through a threaded discussion list. They may also form the basis of advanced web-based modules which could be made available to users after they have completed the short course.
 - We are also currently exploring the possibility of our qualified short course instructors leading/managing courses on GTAP abroad with the Center's assistance. Alternatively the Center might consider employing a staff member to oversee more courses.
- For Policy Makers
 - There is some concern amongst staff that this is not our strengths. We would therefore require the assistance of board members to undertake these courses.

VII. Finances, Budgets and Staffing Plan

Budgeting

To be handed out and discussed at the board meeting.

Staffing

Staffing Goal: To actively seek and encourage talented staff and graduate students

Current Staffing Plan

Over the last few years the Center has been looking for new staff members to assist with the standard GTAP data program, including working on I-O tables, energy, and taxes. Recent new hires will assist the Center in overcoming its immediate concerns. The new people are:

- Angel Aguiar will stay on at the Center as a staff member after completing his PhD later in 2009. Angel will work on I-O tables.
- Levent Aydin has accepted a 2 year appointment to assist with the energy data. Levent is on sabbatical from his home institution in Turkey.

Last year Terrie Walmsley spent a year with the Centre of Policy Studies at Monash University. Terrie's move to Australia is expected to be permanent. So far the arrangement is working for Center staff through continuous contact via phone and visits, although there is some concern from the University about having an administrator located outside of Purdue. In terms of GTAP Project, however, most activities are not located at Purdue. Terrie has been offered an honorary position and office space at both Melbourne and Monash Universities. She will set up a base in Australia from which she can interact with other academics on research projects, supervise graduate students on GTAP related projects, interact with board members in the region, offer courses and have access to offices for herself and visitors from Purdue.

Allocation of Resources over the next year

An overview of how individuals are funded and all the activities they will spend their time over the next 12 months is given below.

<i>Robert McDougall</i>	<i>Badri Narayanan</i>	<i>Angel Aguiar</i>	<i>Terrie Walmsley</i>	<i>Thomas Hertel</i>	<i>Levent Aydin</i>	<i>Alla Golub</i>	<i>Graduate Students</i>
100% core	100% core	50% core (100% Nov)	100% core	25% core	100% core	66% Energy BioScience 34% EPA	Various
Documentation of v7	Oversee release strategy	Documentation of v7	Assist with I-O tables and data base	Assist with GTAP Conference	Energy data	Dynamic GTAP Model Applications	Comparison programs
Comparison programs	Website and data documentation	I-O Tables and peer review process	GTAP Short Course and education plan	Finalize and publish Poverty Module	GTAP-E Model and data	Land Use and Environmental Modelling	Meta data
Meta-data	Version control	I-O table documentation	Grad Student Projects	Grad Student Projects			Trade pre-processing
Energy	Documentation of construction process	I-O educational materials	Migration research	Continue to assess global land use impacts of bio-fuels			FDI data
Domestic Margins	Protection module	Pre-processing of macro data	FDI data	Assess impacts of climate volatility on poverty			Short Courses and education plan
Trade pre-processing	Short Course	Short Course	Dynamic Model and GDyn-E version	Emissions impacts of global economic activity			I-O disaggregation
I-O disaggregation	Seminar series and live sessions		New Africa Project				
Short Course `			Conference				

VIII. Other Business

Research Fellows

Antoine Bouët will report on the committee's decisions at the Board meeting. The committee includes Antoine Bouët (Committee Chair), Thomas Hertel, and Philip Bagnoli. Meghan Alexander and Ginger Batta provide support in collecting CVs and providing an online forum, respectively. The CVs of the research fellows are included in the supplementary material in your folder and are available on the website at: https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2009/supp_material.asp?

Conference Proposals

Chile 2009

Carlos de Miguel will welcome us to Chile and present an update on preparations for the 2009 conference at the board meeting. This event is being hosted by the UN Economic Commission for Latin America and the Caribbean and the Inter-American Development Bank.

Thailand 2010

In December 2007, the board approved the proposal from the UN Economic Commission for Asia and the Pacific to hold the 13th Annual Conference on Global Economic Analysis in Bangkok, Thailand. Mia Mikic will present an overview of the 2010 conference at the board meeting. A copy of the proposal is contained in the supplementary materials on the website at: https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2009/supp_material.asp?

Italy 2011

In January 2009, the board approved the final proposal from the Fondazione Eni Enrico Mattei (FEEM) and the Department of Economics of the Ca' Foscari University of Venice to hold the 14th Annual Conference on Global Economic Analysis in Venice, Italy. Note that this event will take place in late June due to local constraints. A copy of the proposal is contained in the supplementary materials on the website at: https://www.gtap.agecon.purdue.edu/events/Board_Meetings/2009/supp_material.asp?

New Technical Paper, Working Papers and Research Memoranda

New Working Papers

Impact of Biofuel Production on World Agricultural Markets: A Computable General Equilibrium Analysis

By Dileep Birur, Thomas Hertel and Wally Tyner

GTAP Working Paper No. 53, 2008

Why Previous Estimates of the Cost of Climate Mitigation are Likely Too Low

by Jason Beckman and Thomas Hertel

GTAP Working Paper No. 54, 2009

Research Memoranda

Estimation of Missing Intra-African Trade

by Nelson Villoria

GTAP Research Memorandum No. 12, 2008

Alternative Agricultural Price Distortions for CGE Analysis of Developing Countries, 2004 and 1980-84

by Ernesto Valenzuela and Kym Anderson
GTAP Research Memorandum No. 13, 2008

Calibration of a Land Cover Supply Function Using Transition Probabilities
by Syud Amer Ahmed, Thomas Hertel and Ruben Lubowski
GTAP Research Memorandum No. 14, 2008

GTAP-E: A Revised Energy-Environmental Version of the GTAP Model
by Robert McDougall and Alla Golub
GTAP Research Memorandum, No. 15, 2007

Report on GTAP Usage and the GTAP Website

In the Center's first strategic plan, undertaken in 2004, one of our goals was to determine usage of GTAP-based papers in refereed journals. Ginger Batta has undertaken a number of searches to set up a baseline to document the impact of GTAP. Three sources have been examined:

- 1) Econlit: AEA's electronic bibliography of economics literature,
- 2) IDEAS: a freely available, online bibliographic data base dedicated to Economics, and
- 3) Google Scholar: Google's dedicated engine for searching scholarly literature.

The report is provided in the supplementary materials.

The GTAP Website report is also contained in the supplementary materials provided on the board website.

IX. Appendices

Appendix 1: List of potential issues for the discussion during the session on “Data Base and Research Issues”.

It is unlikely that we will have time to discuss all of these, but this is a list of important issues that have come up over the past year and may be of interest to the board.

Research:

- consumer demand in GTAP
- the GTAP Baseline
- labor migration
- land use data base and modeling
- bio fuels
- trade and development
- poverty analysis
- adjustment costs
- services liberalization and FDI
- Climate change
- the environment

Data:

- energy
- services
- trade
- protection
- taxes
- regional disaggregation
- quality comparisons of inputs
- quality comparisons of the final data base
- factor splits
- TASTE Proposal
- Skill splits proposal
- Weighting schemes for protection data
- matching IMF trade totals
- CEPII trade data
- data sourcing
- releasing the data base in GAMS format
- intra-regional trade
- sectoral disaggregation

- Peer-review of I-O tables
- data management issues
- multi-year data bases

Model:

- validation exercises
- parameter estimation
- terms of trade effects in GTAP
- Technical papers
- Dynamic GTAP Model
- GTAP-E Model

Education:

- GAMs courses
- Further overseas courses
- Data Base courses
- Web courses
- Courses for policy makers

Network:

- pricing policies
- scholarships
- conferences
- board meetings and membership
- Europe
- Regional GTAP Centers
- Open source
- staffing

Appendix 2: Strategic Meeting: Three Scenarios

The Center continues to face a number of challenges, primarily related to staffing, which can no longer be ignored. The following is a list of possible scenarios for the future of the Center – and the project more generally. The scenarios represent extremes. It is not expected that any one of these would be implemented in this form, instead we are likely to adopt take the best aspects of all three scenarios in developing our vision of the future.

1. Purdue, Purdue, Purdue

The home and Center of GTAP is Purdue and all core staff must be located at Purdue. Despite some difficulties obtaining and retaining staff, we believe that people work best when working together in a team in the same location. While the Center continues to sub-contract some specific tasks to consultants, the data base construction and code continues to be retained by the core team at the Center in Purdue. In order to ensure we have sufficient staff we are continuously on the lookout for potential post-docs, short term visitors and we actively recruit from our own pool of PhDs.

2. Going Global

In addition to the Center at Purdue, GTAP goes global with the establishment of teams in other regions (e.g., Europe, Asia, Africa etc). Each of these regional teams capitalize on local expertise, research and funding. The teams interact with each other and contribute to core data and network activities, as well as research/data activities of interest in their region. These regional research and data related activities feed back to the core data base and models. Staff often visit and may also move between locations. Each year, all staff meet face-to-face to coordinate efforts. Courses are held at the all locations on a rotating basis.

3. Hub and Spoke

Purdue continues to be the hub of GTAP, but Center staff and contributors, are located in countries all over the world. As the hub, the Center's role is to manage the core funding and train staff. Some of these individuals will become contractors for the Center, returning to their home location to contribute to specific components of the data base. Others may have been visitors, who return to their home institutions (possibly consortium agencies), to become more active contributors. Meetings are held via telephone and adobe-connect and staff frequently visit the Purdue Center. We also have Center-wide face-to-face meetings once a year to coordinate efforts.

Appendix 3: Strategic Meeting: Some notes on Open Source and GTAP

Potential Benefits

- Likely to increase credibility
- Others report mistakes which are then corrected
- Could help to free us from our every growing to do list.
 - o Others contribute improvements
 - o Board members (or others) pay others for improvements in the areas they want
 - o We can submit requests for proposals on issues of interest to Board/Center.
 - o Contributions are immediately compatible with construction program, thereby reducing the work required in-house.
- People previously working on post-data construction programs can now incorporate changes at a more appropriate time in the construction process.
- Highlights potential new staff members
- Potentially strengthens our position/sales as we are able to incorporate more changes, more quickly.

Features which make Open source possible

- Modularised system
- Data base is perceived to be important by users
- Data base and code would benefit from peer review
- Center can lead process to ensure something useful comes out of it.
- There is already a fairly well established community of potential contributors and these potential contributors already see value in collaboration and sharing of data.

Things to think about

- We do need to marry open sourcing with our financial needs? Firms have married open source and commercial enterprises: it doesn't all have to be open source.
- Some companies have opted to sell the rights to access software code.
- Are we comfortable enough with the code to release it?
- Process needs to be well documented
- We need to be very responsive to network – source of failure (forking) of open source projects is often due to lack of responsiveness.
- Must keep open source code up-to-date. Could have two code streams (actual used to construct data base and the open source variation).
- Rules – which programs can be used? Restrict to GEMPACK, GAMS, perl, etc. or open up to other programs?
- The programs we use are not open source themselves. There is a cost to others to use/run the code even if what we put up is open source.
- Biggest cost is probably training, since GEMPACK is not widely known.

- 80:20 rule also applies further reducing the core team of contributors. Experience with open source is that the core team of people who contribute to the code is usually very small. In our case I imagine 90% of fixes will be done by less than 5% of people. The team of people who might contribute is likely to be small.
- Distribution types – GDL and BSD style licenses. Main difference is whether we insist that code derived from our open source code is also open source?
- Data – some of it is free, some available for a fee, and some is not available at all. And if data were open source or could be collected easily it is likely to affect our ability to sell the GTAP Data Base.
- What about contributions/changes to the data – can/should we insist that these be open source or at least contributed to GTAP?
- If we allow people to add regions on their own then what makes them contribute the data to us.
- Who decides what gets accepted into the standard? And what criteria?
- Contributions of code may also require new data, not just today, but into the future.
- What about potential damage caused by people who do all this work, but code gets rejected? What if they are a board member?
- Copyright – legal implications would have to be sorted out before release.
- Implications for hiring: Any serious attempt to do this will probably require at least one new staff member (possibly a computer programmer).
- Implications for website and computing?
- How do we sell the proposal to NSF or similar?

Various ideas:

- Make GTAP Data Base freely available.
- Make available a binary code which allows certain data to be modified - e.g., add a region.
- Share certain modules early in the construction process with board/collaborators.
- Code gets released to board members and special contributors – assumes we already know who the core 20% are.
- Code gets released with old or made up data to network – allowing us to retain control over data and final product, but others can test and contribute code for potential inclusion in GTAP Data Base.
- Code and/or data are accessed through a computer at Purdue by purchases of GTAP Data Base, allowing people to view and alter code and/or data, but cannot download and take away intermediate data or code. Can only download alternative final product. All changes get kept for review by Purdue for potential inclusion in final data base.